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Subscribers are requested to observe that the receipt of THE CHEMIST AND DRUGGIST in a Green Wrapper indicates that with that number the term of subscription has expired, and that no further number will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order, without an exact system like this.

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The proceedings at the meeting of the Pharmaceutical Council on the 3rd inst. were almost exclusively devoted to "home" matters—library, museum, &c.—and were devoid of general interest. Mr. Schaecht reopened the question of a pharmaceutical laboratory, though, he said, he only did so in consequence of the letters which had appeared in the journal from several gentlemen of eminence advocating views similar to his own. He suggested a certain space on the premises where a collection of apparatus could be stored. Mr. Sutton suggested that it would be well if Mr. Schaecht would give a more detailed statement of what he wished, and this Mr. Schaecht promised to do. It was stated that in the Preliminary examination (henceforth to be conducted by the College of Preceptors) "simple and compound

proportion" would hereafter be included in the arithmetical portion, and that the handwriting of the candidates would also be taken into account. Certain modifications in the regulations for the Major and Minor examinations had been suggested by the English Board, but were not agreed to by the Scotch Board. The decision was left to the Council, and an interview was arranged for December 1. We are not told what these modifications are. Mr. Williams (as Treasurer) intimated that, on the election of examiners to occur next month, he should probably suggest the desirability of reducing the number of examiners, or making such alterations as would prevent the examinations becoming a financial loss to the society. Several members expressed their conviction that the examinations could not be properly conducted with a less number of examiners than at present. In reply to a query, it was announced that the council had received an intimation from the Board of Inland Revenue to the effect that methylated tincture of opium could not be allowed to be made, kept, or sold.

A number of pharmacists in the provinces, both by letters and in speeches, have advocated the scheme suggested by Mr. Schaecht, but rejected by the Council, of establishing at Bloomsbury Square a model pharmaceutical laboratory, or at least a collection of apparatus. Many seem to confound the two, and, while disregarding the difficulties attending the establishment of the first, ignore the almost total uselessness of the latter.

The Irish Pharmaceutical Council has resolved, by a large majority, to adopt only one grade of pharmacists under their new Act, these to be entitled "Pharmaceutical Chemists." A set of regulations for the examination has been adopted (though it has not yet been approved by the Privy Council) which would permit the title of "Pharmaceutical Chemists" in Ireland to be gained much more easily than the lower qualification of "Chemist and Druggist" in this part of the kingdom can be obtained.

The *Pharmaceutical Journal* regards the decision to establish one class only as a result "eminently satisfactory," and furnishing "reason to anticipate the possible attainment of reciprocity between the two countries." It appears to us to be precisely the reverse. If the requirements of Ireland are to be met, this one qualification must needs be lower than that for our honorary title of "Pharmaceutical Chemist." The *Medical Press* holds the same view as ourselves, and considers that the council have committed a signal and well-nigh fatal mistake in decreeing that there shall be no second grade of pharmacists in Ireland. The *British Medical Journal*, with a curiously foggy notion of the question, informs its readers that it was finally decided by a large majority that there should be but one qualification for those compounding medicines in Ireland and that it should be that of pharmaceutical chemistry.

The Indian correspondent of the *Times* states that a new Opium Bill has been introduced into the Legislative Council by Sir William Muir, and is now before a select committee. Its object is "to assimilate the laws relating to the growth and manufacture of the drug in Bombay and Madras to those in force in the Bengal Presidency." In Madras there is no check whatever on the growth of opium, while in Bombay it is practically the same. We may here state that in Bengal no one is permitted to cultivate opium who will not undertake to deliver the entire crop to Government agents at the contract price. The opium is, after preparation, sent to Calcutta, where it is sold by auction, in which Chinese agents buy largely. The drug contributes more than six millions of the gross annual revenue of Bengal.

"A little knowledge is proverbially dangerous," says the *Sanitary Record*; "hence the attacks upon that most useful branch of chemistry, food analysis, which have appeared from

time to time in the columns of some of our contemporaries." We fail to see the logic of this sentence, according to which attacks on food analysis result from the fact that "a little knowledge is proverbially dangerous." Perhaps it is; still it is a pity that certain professors of food analysis do not risk the danger. A little knowledge would be better than none at all; and we might say the same in respect to modesty.

The prize of 200*l.* offered by J. W. Pease, Esq., M.P., for the best essay on "British Opium Policy, and its results to India and China," advertised in this and other journals about a year ago, has been awarded to Gilbert Malcolm Sproat, Esq., Agent-General for British Columbia; and the second prize of 100*l.* to the Rev. F. S. Turner, Secretary of the Anglo-Oriental Society for the Suppression of the Opium Trade. Seventy-five essays were sent in for competition. The adjudicators were Sir C. E. Trevelyan, Sir H. Bartle Frere, and Sir Louis Mallett. (*See Advertisement.*)

Mr. S. R. Atkins, of Salisbury, a well-known pharmacist, has won golden opinions from all classes of his fellow-citizens by his able and zealous discharge of the honourable duties of mayor of that ancient city during the year just past. Near the close of his official term he gave a grand banquet to about 150 of the chief residents of Salisbury, and numbered among his guests the Earl of Pembroke, Sir T. F. Grove, Bart., Sir E. Antrobus, Bart., M.P., the Hon. E. P. Bouverie, Dr. Lush, M.P., Mr. G. R. Ryder, M.P., and many distinguished representatives of the church, the law, the army, and medicine. It is not desirable to cultivate one idea too exclusively, and we are always glad to see our brethren, if we may thus venture to link ourselves with municipal dignitaries, fulfilling these important and honourable duties.

Citrate of magnesia has again effervesced in a police court, Mr. McCowan, the Greenock analyst, charging it with being a mass of adulterations and a vile compound. The Greenock and Glasgow chemists took up the defence and showed conclusively to the magistrate that this "vile compound" was what the public wanted when they asked for citrate of magnesia, and a judgment for the defendant was recorded.

Mr. Wm. Morgan, Ph.D., F.C.S., Public Analyst for Swansea, has shone forth lately with peculiar lustre in the chemical firmament. In a police case tried at the Glamorganshire Quarter Sessions he was asked as to the nature of train oil. It was a vegetable oil, he said, and that was all he knew of it. On maturer reflection, however, he remembered that it was produced from the whale; and this thought led him to correct his former statement by assuring the court that train oil should be classed among the mineral oils. Coming from a Welshman, this information concerning Whales is particularly instructive.

The Lincoln doctor who recently, on public grounds, exposed his neighbour's "blood mixture" criminality in the columns of the *Lancet*, brought the threatened action against Mr. Clarke last month for services alleged to have been rendered ten years ago. The doctor's book-keeping did not seem to be of a high order, and the defendant affirmed that when he asked for his bill many years ago plaintiff had declined any payment. The jury ultimately found for defendant.

The depravity of which those patent medicine proprietors are expable will never be accurately estimated. According to the *Lancet* the enterprising proprietors of a widely-advertised quack medicine, which professes to afford instant relief in "convulsions, flatulency, affections of the bowels, difficult teething, thrush, rickets, measles, whooping-cough, or vaccine inoculation," and rejoices in the name of "Infants' Preservative," have recently addressed every registrar of births and deaths in England and Wales, offering to pay him at the rate of twopence for delivering a circular advertisement of this "Infants' Preservative,"

together with the vaccination notice, at the registration of every birth. A large number of registrars immediately reported the circumstance to the Registrar-General, who has expressed his disapproval of registrars accepting such an agency, and his hope that "no registrar in England and Wales will comply with the invitation" conveyed in the circular.

Dr. Dupré, the analyst for Westminster, has the credit of making the first mess under the new Sale of Food and Drugs Act. A dairyman was summoned the other day for having abstracted cream from milk. Dr. Redwood was called for the defence, and his evidence convinced the magistrate that the low proportion of cream was due only to the fact that earlier customers had got the best of the supply. The summons was dismissed with costs.

ON THOROUGHNESS IN STUDY.

IN the course of an address to the students of the Norwich Chemists' Association, Mr. F. Sutton, F.C.S., expatiated on the need of thoroughness in pharmaceutical as in other branches of study.

Those of you, he said, who may remember anything of the history of England before the Restoration will perhaps remember the adoption of the one word "thorough" by the powerful but unprincipled and cruel minister of the Crown, Earl Strafford, when he designed to make Charles a monarch as absolute as any on the Continent, to put the estates and the personal liberty of the whole people at the disposal of the Crown, and, in short, to reverse the whole of the privileges and rights which our forefathers had fought and died for, and the acquisition of which had mainly helped to make England the great nation she was and is. That man had a single eye to this point, and, like all men of ability with one idea, he was a dangerous man. My desire, however, is not that you should adopt this word in the same way as he did, but that you should use it as your motto for study. In the present day greater demands are made upon students than formerly, and what with examinations and competitions on every side there is quite enough to do; but this very set of circumstances and the increasing activity of life tend greatly to make students superficial, and to render them satisfied if they can merely squeeze through the required standards and then quickly forget the little they once did know. In these eastern counties we are somewhat unfortunate in having no local centres for the prosecution of scientific knowledge such as occur in the Northern, Midland, and Western counties, and this arises mainly from the fact that the district is agricultural rather than manufacturing. This deficiency makes it all the more necessary for us to help ourselves; we must be self-reliant and do what we can to keep pace with our neighbours. When I compare the present state of things with the time at which I was of your age, I see a manifest improvement in the means of acquiring knowledge, but I cannot say as much for the disposition to make use of those means. It is often said that there is no royal road to knowledge, and it is true; there are here and there brilliant intellects which acquire knowledge rapidly and exactly, but the rule is like that of Artemus Ward's show, "You may pay and come in, or you may pay and not come in, but you cannot come in without paying;" in other words, you must work if you would obtain the reward. Depend on it, that any young man who determines to know his business thoroughly is sure to succeed, and will stand out head and shoulders above those who are merely content to get a smattering of things in general—just sufficient to enable them to squeeze through their examinations, "saved as if by fire." The day is fast coming when we shall see pharmacy standing in a higher position than it has done. There are fewer coming into the occupation, and the numbers of competitors for a living on a given space of ground are lessening. I hope the day may speedily come when we may find fewer establishments, but such as there are, really good; when each place has a working laboratory with efficient apparatus, and where real practical work can be done, rather than, as is often the case now, all the important preparations purchased of a wholesale manufacturer, so that the occupation of a pharmaceutical chemist is more that of a huckster than of a scientific man.



CONDUCTED BY RICHARD J. MOSS, F.C.S.

WE purpose again distributing samples of an official compound for examination. The substance is to be submitted to such a chemical examination as is required to detect the metallic and acid radicals that may be present; the name of the substance is to be ascertained, and a report made as to its purity.

ANSWERS.

The white powder distributed for analysis in September was *Calcis Phosphas*, B.P., adulterated with 20 per cent. of calcium sulphate; it also contained as impurities iron (triad), magnesium, aluminium (a trace), ammonium, and the hydrochloric radical.

This analysis presented difficulties for which several students were not prepared. When a substance is found to be insoluble in water, and an acid is therefore employed to dissolve it, it must be remembered that when ammonia in excess is added to this acid solution the original substance is sometimes precipitated. The compounds of this character most frequently met with are the phosphates of aluminium, chromium, iron, barium, strontium, calcium, and magnesium; and the oxalates of barium, strontium, and calcium, and also silica. It is evident, therefore, that if any of these existed in the substance under examination, they were to be found in the precipitate produced by ammonia and ammonium sulphide, and, accordingly, this precipitate had to be examined by a very different method to that which would suffice when only zinc, manganese, nickel, cobalt, chromium, aluminium, and iron might be present, and the phosphoric and oxalic radicals absent. We cannot here describe the treatment to which the precipitates containing phosphates and oxalates must be subjected, but must leave our correspondents to find this out for themselves. Methods which give very satisfactory results are described in Galloway's "Qualitative Analysis;" there also a good method given by Fresenius.

Another source of error is one to which we have referred over and over again. Those for whose benefit our remarks have been made will perhaps ultimately take the matter into consideration. When a substance does not completely dissolve in water, it does not follow that it is entirely insoluble in water: part of it may have dissolved. To settle this point the clear water obtained either by decantation or filtration should be evaporated to dryness: if any residue remains, it is clear that something was dissolved by the water. It will depend upon the quantity of residue left whether its nature can be determined or not. If it is not possible to find out what the residue is, the student will find that the honest plan of making a statement to this effect is better than to ignore the existence of even the most trifling residue. It is quite impossible to be too particular about details of this sort: there is no other way of attaining accuracy; in short, there is no other way of doing honest work.

PRIZES.

The First Prize for the best analysis has been awarded to C. J. BENNETT, 14 Waterloo Road, Widnes, Lancashire.

The Second Prize has been awarded to CHARLES THOMPSON, 16 Gallowtree Gate, Leicester.

Marks awarded for Analyses.

C. J. Bennett (1st prize)	100
Charles Thompson (2nd prize)	95
Chalmers	94
Enlar	93
Excelsior	92
Nemesis	90

Marks awarded for Analyses—(continued).

Non Nullus	90
H. J. Jackson	88
S. W. A.	80
E. J. A.	80
Andacter	70
H. H. E.	65
J. A. Halhead	60
Cyanogen	50
Primum Assum	50
Novice	50
Solu	50
Lux	5
G. B. Whelpton	5
Myrrha	0
G. H. Newton	0
F. W.	0

TO CORRESPONDENTS.

* * * All Communications should include the names and addresses of the writers.

Prizes.—The students to whom prizes are awarded are requested to write at once to the publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as a second prize.

C. Thompson.—Your report was highly creditable; the way in which it was drawn up leaves nothing to be desired. We wish other students could be induced to adopt the plan of tabulating their notes.

Nemesis.—A comparatively large quantity of the substance failed to give any indication of carbonates.

Non Nullus.—Perhaps you did not pay due attention to the necessary precautions in testing with the nitric acid solution of ammonium molybdate. The liquid to be examined should be acid or neutral, and an excess of phosphoric acid must be avoided. It is best to add the solution under examination to an equal quantity of the molybdate solution.

S. W. A.—You had no evidence that the sulphuric radical was in combination with iron. It is always best to confine positive statements to positive facts.

E. J. A.—Such a small quantity of sodium is capable of being detected by the flame reaction that it is always found in the residue left after the separation of the other metals. You must be guided by the quantity of residue in deciding whether the sodium is to be taken into consideration or not. The same remark applies to potassium and lithium when the spectroscopic is employed. Your examination for acids was very superficial.

Andacter.—You do not appear to have sought for more than one acid; there was a considerable quantity of the sulphuric radical present.

J. A. Halhead.—Calcium phosphate is not the only salt that is precipitated from its acid solutions by ammonia, so this reaction cannot be described as characteristic of calcium phosphate.

Primum Assum.—For each of your fourteen tests you took a fresh portion of the original solution. If you consult any work on chemical analysis you will find that the reagents for the detection of the metals are employed in such an order as to render the use of fresh portions quite unnecessary; on the contrary, it is essential that only one portion should be employed, except for the detection of ammonia, which must be sought for in a separate portion of the liquid.

Novice.—It is impossible that you could have neutralised the acid solution of the substance without producing a precipitate. Ammonia should have been added to the liquid until there was a distinct smell of it after the mixture was well shaken. We do not require quantitative analyses, because many students have not the necessary apparatus.

Solu.—You might have ventured to describe your examination of the substances, as you see your conclusion was quite correct.

Lux.—The colour you attributed to chromium was due to iron. See remarks to *Novice*.

Myrrha.—You will find it a good plan to confine yourself to qualitative work for the present: it will give you quite enough to do.

G. H. Newton.—It is easy to distinguish calcium phosphate from aluminium hydrate; the latter is thrown down by potash as well as ammonia, but it dissolves in an excess of potassium hydrate, whereas calcium phosphate, although precipitated by both reagents, is not re-dissolved by either. A solution of aluminium hydrate in potassium hydrate is re-precipitated by boiling with ammonium chloride.

THE CULTIVATION OF ANALYTICAL PRACTICE BY CHEMISTS AND DRUGGISTS.

THE following paper was read before the Homeopathic Pharmaceutical Association at their quarterly meeting, Oct. 21, 1875, by Mr. George Cheverton, Tunbridge Wells. It was entitled "The Desirability of Homeopathic Chemists making themselves more proficient in General Analysis, having special regard to the Urine." Mr. Cheverton, in some introductory remarks, in the course of which he paid a cordial compliment to THE CHEMIST AND DRUGGIST for its "highly laudable efforts to stimulate the zeal of pharmaceutical students on this subject by the offer of prizes for the best chemical analysis," undertook to show that homeopathic chemists especially should become proficient in chemical analysis.

The reasons of this, he continued, are obvious. The rough and ready tests of the purity of drugs given in the British Pharmacopœia and various works on *Materia Medica*, however correct so far as they go, are wholly insufficient for the direction of a really conscientious homeopathic pharmacist, of one who is anxious not merely to discharge his own duty, but also, to the utmost of his power, to further the spread of the system to which, after careful study, he has given his adherence, and for his adherence to which in most cases he has sacrificed so much.

Which of us would be satisfied with an alcoholic solution of guaiacum resin, only because it gave a blue colour when applied to the surface of a slice of potato? or with a decoction of calumba, because it was blackened by solution of iodine? or with gamboge because it does not become green with the same? or with podophyllin which is almost entirely soluble in pure ether? or with medicinal salts left no residue when burned with access of air? or with an opium satisfying only the well-known test, too long to be detailed here, and which, by the confession of the allopaths themselves, merely proves the presence of a certain percentage of morphia, leaving the question of the presence of extraneous impurities (whether from accident or fraud) wholly untouched? I will not take up your time by enumerating more instances of this kind; I merely wish to draw special attention to the fact that to us as homeopathic pharmacists the absolute purity of our drugs is a matter of essential importance, not merely for the sake of guarding against the presence of any foreign ingredients, but because the administration of one drug, and one drug only at a time, was laid down by Hahnemann as the very essence of homeopathic practice, so that the presence of a foreign drug which an allopath might in some cases deem immaterial, because not seeming to his mind likely to interfere with the action of the "characteristic" drug before him, might render our preparations of the same nearly or quite valueless for the particular cases in which they were prescribed, and would certainly most materially impair the value of any "proving" made with the preparation in question. It is not, perhaps, too much to say that a very large proportion of the vagueness and uncertainty attending some of the earlier "proving" is to be ascribed to the want of that skill in chemical analysis, which was then indeed hard—sometimes even impracticable—to acquire, but which now, thanks to the indefatigable labours of distinguished chemists at home and abroad during the last 30 or 40 years, and the improved means of chemical and physical research, lies within the reach of every intelligent, industrious, and conscientious student. But there is another aspect of the question of scarcely less importance. I allude to the valuable assistance which a thoroughly qualified analyst might render to the physicians practising in his vicinity. It may be said that this applies equally to the homœopaths and allopathists, but this is not strictly true. There are in various towns well-qualified chemical analysts; but hitherto these have, with hardly an exception, been such devoted adherents of the allopathic camp as materially to impede anything like free and unrestrained intercourse between them and physicians of the school to which we belong. However much this is to be regretted, such is the fact, and there is no use shutting our eyes to it. The consequence is, that the overworked homeopathic physician, the very nature of whose practice requires him to devote a much longer time to the consideration of each individual case than is usually deemed necessary by his allopathic confrère, while it at the same time demands the minutest knowledge of every morbid symptom, chemical no less than physiological, has

himself to undertake all the drudgery of a minute chemical analysis of the secretions, and so forth, which his more fortunate rival can not unfrequently devolve on others. Do not take offence at the word "drudgery." Chemical analysis, as we all know from more or less personal experience, is a most fascinating, though a most laborious, pursuit, but an overtasked medical practitioner may well be excused if at the end of a hard day's work he is more alive to its laboriousness than to its fascinations, and this laboriousness is increasing every day. Take the case of urinary analysis. Some years ago even a fairly capable physician felt he had fully discharged his duty when he had boiled a small quantity of his patient's urine, added a drop of nitric acid, and perhaps subjected it to a cursory microscopic examination for "casts." By this means he satisfied himself of the presence or absence of lithates, phosphates, albumen, and epithelial cells. But in the first place, this rough and ready method gave no indication of the daily increase or diminution of the substance sought for, unless, indeed, as very seldom happens, such increase or diminution was so very striking as to be at once perceptible to the eye. The same remark applies to the tests for sugar as usually performed, not to dwell on the fact that carelessness in the performance of these, and you are well aware they require some precautions, may lead to actually false results. Yet the above, with the exception of perhaps testing the specific gravity, and the acidity or alkalinity of the urine, were nearly all the tests usually employed. Need I remind you how very easily "casts," if few in number, elude observation under a cursory microscopic survey? How easily a few crystals of oxalates—characteristic as is the appearance of these—may under such circumstances fail to enter the "field" of the microscope? Yet the former may be the valuable prognostics of some form of Bright's disease in its earlier and more remediable stages; the latter may be the indications of a commanding "oxalic" diathesis, and the imperative summons to the special and characteristic treatment demanded by that morbid condition. Even where the above cursory method is in some measure satisfactory as a qualitative analysis, we have seen it has no pretensions to afford any quantitative information. Still less does it teach us anything about the quantity of solid matter—the relative proportions of the organic and inorganic matter, the amount or even presence of iron—ammonia, hippuric acid, creatine, and creatinine, xanthin, fat, bile, lactic acid, &c., to say nothing of such rarer and less important ingredients as acetic, benzoic, phenylic, formic, and succinic acids. To determine such questions with anything approaching to precision requires costly apparatus, much time, care, and patience, and the possession of a technical knowledge of detail, the special province of the chemical analyst, such as most physicians may well be excused for not possessing. Yet all this refers merely to the examination of one single secretion under the ordinary circumstances of health or disease. When to this we add the examination of saliva, vomited matter, feces, &c., under similar circumstances, and the still more careful scrutiny to which such must be subjected in cases where poisoning or other malpractice is suspected, we cannot fail to see how valuable an auxiliary a thoroughly competent pharmaceutical analyst must prove to the physician. When we more closely investigate the circumstances of the case, it is obvious that the homeopathic pharmacist capable of undertaking such duties would possess an especial value to the homeopathic practitioner, and such being the case, it is not to be doubted that he would meet with a most hearty welcome, and with the more substantial, even if not more agreeable, recompense of ample pecuniary emolument. And this latter consideration (I mean increased pecuniary returns) is of importance not only to ourselves, but to the body of which, may I say? we form so important a part. Many of us are aware of the difficulty experienced by a homeopathic chemist of making a living in some places by the mere sale of drugs. Now, in England, appearances, such as cannot be kept up without money, rank very high indeed—far too high in my opinion. Until, therefore, we are at least on a par with our allopathic confrères in money as well as knowledge, we shall always be at a disadvantage in the public esteem, and so, to no small extent, damage the cause we hold so dear. I think I have sufficiently demonstrated that a recognised skill in chemical analysis would open up an almost certain and most legitimate path to fame. Whatever obstructions may be thrown in the homeopathic physician's way who seeks to distinguish himself in the strictly professional department of his career, no chemical society has yet closed its doors, no chemical periodical has yet closed its columns, against the labours of the chemical

THE ANALYSIS OF CINCHONA BARK.

analyst, whether homoeopathic, hydropathic, allopathic, aceto-pathic, or anything else. Why should not we, too, have our Taylors, our Guys, and our Hassalls? And when one scientific fame has been awarded to any recognised section of the homoeopathic community, the reputation of the body at large will quickly rise in public esteem; so that it seems no vain hope that at no distant day we homoeopathic pharmacists may have the proud satisfaction of feeling that by our own exertions we have not merely enriched ourselves, but largely contributed to obtain a patient and unbiased hearing, with the ultimate acceptance, for the doctrines we hold of such paramount value.

I could have wished to have spoken somewhat at large to our younger friends here present upon the best method of pursuing analytical research, the books which they ought to study on the subject, the importance of early familiarising themselves with the use of the microscope, and other kindred topics. But I have already encroached too much on your time and attention, and therefore I must be brief. As to the method to be pursued in your analytical studies, I may leave that to the directions of your several employers and teachers, who will be best qualified to determine that which is to be preferred in each individual case. With regard to books, I might mention many. A beginner will find many useful hints in Professor Huxley Bennett's "Introduction to Chemical Medicine." Bowman's "Medical Chemistry" I find an invaluable book, as also is Beale's "On the Microscope." A small book, entitled "Chemistry and Chemical Analysis," will be found a useful "stepping stone," and to many, "Analysis," by Venable, is a very handy volume. On the spectrum analysis of blood some valuable remarks will be found in the Supplement to Watt's "Dictionary of Chemistry." The student will find this last-named work of great value in many places. "A Guide to the Qualitative and Quantitative Analysis of the Urine," by Neubauer and Vogel, was published by the New Sydenham Society, 1863, p. 158. There is also Norrman's "Chemical Analysis" in the Library of the society. But however excellent the books you may read, and needful as such guides are in their own sphere, you must never forget that the analytical chemist is formed in the laboratory and not in the study. And with regard to the microscope, I would caution you against too opposite but almost equally dangerous errors. I would first encourage you not to give over in despair, because for some time you may find yourselves unable to use the instrument to much advantage. The use of the instrument is difficult, I admit, and not to be acquired in a day; but the difficulties are such as may be overcome by perseverance and application, and, once overcome, you will be masters of a weapon of original research, and of unrivalled power. On the other hand, do not too soon rest satisfied with the skill you may have acquired in microscopic examination. A certain degree of facility in the use of the microscope is of no very hard acquirement, and will probably be attained by you before very long. But to become a first-rate microscopist is the work of years. And you ought always to aim at becoming first-rate in whatever you undertake. And I would remind you, in conclusion, that the work to which you propose to devote your lives is no mere trade to be exercised with the sole view of enriching yourselves with the greatest possible speed, but a strictly liberal and learned profession (even, if not as yet, commonly recognised or named as such), which you are to exercise for the benefit of others, and the advancement of the profession itself, far more than for your own enrichment. Keeping this higher aim constantly in view, you will hardly fail to realise a sufficiency even of the lower objects of desire. If, however, you make these your first aim, you may be able to discharge the duties of your future profession in this only worthy manner, it is an absolute pre-requisite that you should avail yourselves to the utmost of the great advantages which your various means of instruction now place within your reach.

I would desire ere closing to say a word or two on the spectroscopy, which bids fair to equal, if not eclipse, all other tests in the earlier stages of qualitative analysis. Personally I am nearly a stranger to its use, and my worthy friend and colleague, Mr. Thompson, is the only person who has given me an introduction a specialist, and is therefore quite *au fait* with it, will doubtless supplement me with some remarks on its use. I am hoping shortly to possess a powerful one, and after a short time to acquire some practical knowledge of the same, and shall then, gentlemen, if it be your pleasure, communicate to the associates my experience in this important study.

A PAPER with the above title was read at the evening meeting of the Pharmaceutical Society on November 3, by Mr. Edward L. Cleaver, F.C.S. The author was no doubt justified in introducing his essay with the remark that there has not been published up to the present moment any method by which a person inexperienced in bark analysis could obtain trustworthy results. He then gave a *résumé* of some of the existing processes, and pointed out their defects.

(a) The B. P. method.

One hundred grains of finely powdered bark are macerated and boiled in 1 fluid ounce of acidulated water, the percolate with 13 ounces more of similarly acidulated water, or until the percolate is free from colour. The liquor is then treated with subacetate of lead to remove colouring matter, &c., and, after filtration, mixed with caustic potash and 12 fluid drachms of ether. The ethereal solution is removed, evaporated, and the resulting alkaloid weighed. The chief objections to this method are the following:—

1. The quantity of bark directed to be taken is too small.
2. One fluid ounce of liquid is not enough to properly macerate 100 grains of bark in fine powder.
3. One and a half ounce is not sufficient liquid to exhaust the bark, and if percolated until the percolate is free from colour, about 10 ounces of liquid will have to be collected.
4. The removal of the colouring matter by subacetate of lead ensures loss of alkaloid.
5. The method of removing the alkaloid by means of ether ensures loss of alkaloid, and also does not guarantee the purity of the residue.
6. Quinine is not perfectly dried by the heat of a water-bath.

(b) The next method for consideration is that in which the bark is exhausted with dilute acid and precipitated with soda. The precipitate is then washed, treated with some solvent, such as oil of turpentine, coal oil, alcohol, or ether, the liquid filtered and distilled off, and the residue treated with dilute acid, precipitated, dried and weighed. The objections to this process are:—

1. The quantity generally ordered (100 grains) is too small.
2. Some barks when exhausted with acid and precipitated with soda give a precipitate which does not subside easily, thus giving rise to loss.

(c) The precipitate so obtained is much contaminated with colouring matter, which dissolves in the menstruum used to exhaust it.

(d) The water used to wash the precipitate dissolves some of the alkaloids present.

(e) Another process is that suggested by Dr. De Vrij, which is as follows:—

Twenty grams of bark are made into a paste with 5 grams of slaked lime, and then dried, the resulting powder twice boiled with strong alcohol, and the liquids mixed, it is then acidulated with sulphuric acid, filtered, and the spirit distilled off. The resulting liquid is filtered, precipitated with soda, and the precipitate washed, dried, and weighed.

This is certainly the best process hitherto described, as by it the alkaloids are obtained in a very pure condition, but it is open to the following objections:—

1. The quantity ordered to be used is too small.
2. In washing the alkaloids some of them are dissolved, and if much water be used the error this causes is considerable.

Bearing in mind these objections (the author continued) I have endeavoured to devise a process which, even in the hands of inexperienced persons, shall give accurate results in a short time. It is as follows:—Not less than 100 grams of finely powdered bark are made into a paste with 25 grams of slaked lime, and dried over a water-bath. The dried mass is then thoroughly exhausted with spirit, which operation I perform as follows, but which can be varied at the will of the operator:—

I put the mixture into a percolator, which has the outlet closed by a tap, and is steam jacketed; on the top is clamped a movable cover having an upright condenser attached to it. The tap at the bottom being closed, a litre of strong methylated spirit is introduced. Steam is then passed into the jacket and the mixture will boiled for half an hour, the spirit that evaporates condensing and running back into the percolator. At the end of that time steam is turned off and the tap at the bottom opened, when the spirit will flow out. A little fresh spirit is poured upon the top of the mixture to displace that held in the mass, and the above operation is repeated.

The percolates are then united and made faintly acid with

sulphuric acid, and the spirit distilled off, which is best done in a small flask, holding about one-fourth of a litre, with an arrangement fitted to secure a flow of spirit equivalent to the amount that distils over. When all the spirit has distilled away the remaining liquid is turned out and filtered into a beaker, the filter being washed and the liquid evaporated to dryness with excess of pure carbonate of barium (which should be well washed before use in order to free it from carbonate of sodium, which would vitiate the result); it is then exhausted with alcohol, and the liquid made up to a measured volume. If only the mixed alkaloids are wanted, a portion of the liquid is evaporated to dryness and dried at 130°C , until desiccation is complete. If, however, the proportions of quinine or other alkaloids are wanted, the operator must adopt one of the undermentioned methods, according to circumstances:—

In estimating the amounts of the different alkaloids contained in the barks, it must be remembered that quinine exists in two modifications, viz., amorphous and crystalline, and as the commercial value of a bark depends chiefly upon the amount of crystallisable quinine it contains, an alteration of the process is required accordingly as the analysis is made for commercial or experimental purposes.

I will first give some methods by which the total amount of alkaloids can be ascertained.

All the cinchona alkaloids, with the exception of quinine, are insoluble in pure ether when treated singly with that solvent; but in the presence of quinine cinchonidine is dissolved also, hence in barks containing both quinine and cinchonidine the proportions of quinine found are always too high. Great care must also be taken with regard to the ether used; none but pure, well washed and afterwards dried ether being taken, as the alkaloids other than quinine are perceptibly soluble in the water and alcohol which ordinary samples of ether always contain. The first method for the estimation of the total quinine is that in which the white powder obtained in the preliminary operation of extracting the total alkaloids by saturating the acid solution with excess of carbonate of barium is exhausted with ether, the ethereal solution evaporated dried at 130°C , and weighed. This method, when carefully performed, gives accurate results, providing cinchonidine is absent from the bark employed, otherwise the results are a little too high. Another method, which may be resorted to when rapidity is an object, is as follows:—

The alcoholic solution of the mixed alkaloids obtained as described above is divided into three or four equal parts, the first of which is evaporated to dryness, dried at 130°C , and weighed. This gives the total alkaloids. The second portion is evaporated to dryness, treated with ether, and the solution filtered, evaporated, dried at 130°C , and weighed. This gives the total quinine. The third portion is titrated with standard sulphuric acid, and by means of the following equations the proportions of the isomeric alkaloids are obtained:—

Let x = the amount of quinine and quinine in the weight of alkaloid taken.

The total weight taken $x =$ the amount of cinchonidine and cinchonine present; then

$$\frac{498}{648} + \left(\frac{\text{the total alkaloids} - x}{616} \right) \frac{98}{16} = \left\{ \begin{array}{l} \text{The amount of sulphuric} \\ \text{acid used.} \end{array} \right.$$

The quinine found previously is then subtracted from the value of x , which gives the quinine. That portion of No. 2 which was insoluble in ether is then treated with warm dilute sulphuric acid, and made faintly alkaline with solution of soda. Rochelle salt is then added, and the precipitate that forms after some time collected and weighed: it consists of tartrate of cinchonidine, and contains 80.4 per cent. of cinchonidine.

The cinchonidine found is then deducted from the weight of mixed cinchonine and cinchonidine found from the equation, and thus gives the amount of cinchonine.

The amounts of alkaloids found are then multiplied by three or four, according to the number of parts into which the alcoholic solution was originally divided.

This process is comparatively rapid, and if carefully performed gives accurate results.

I next come to those processes in which the separation of amorphous and crystallisable quinine is required. Dr. De Vrij effects this separation by taking advantage of the fact that the amorphous alkaloid does not form herapathite with an alcoholic solution of iodine, and this method is exceedingly good, but it has the disadvantage of not producing the alkaloid in the state of crystalline sulphate which is the condition in which the quinine present is required by the manufacturer. A process for the

estimation of the crystallisable quinine has been devised by Carles, who obtains the mixed sulphates in a hot slightly acid solution. He then says that on cooling the whole of the quinine is precipitated, whilst the other alkaloids remain in solution. This, however, is an erroneous statement, as the other alkaloids are precipitated under similar circumstances with the quinine.

The process I have adopted is as follows:—

The powder obtained by saturating the acid solution of the total alkaloids with carbonate of barium is exhausted with pure ether; this solution is then evaporated to dryness, and the extract dissolved in dilute sulphuric acid; it is then heated to boiling, and made faintly alkaline with solution of soda, and on cooling the sulphate of quinine is deposited in fine white crystals, which are collected, slightly washed, dried over a water-bath, and weighed. The mother liquor and wash water is then collected, and either evaporated down, and the fresh crop of crystals added to those already collected, or it is measured, and one part by weight of quinine sulphate added to that before found for every 500 parts by volume of the liquid.

The points to be noted in this method are:—

The quantity of dilute acid used to dissolve the quinine should not be more than forty times the amount of the alkaloid present.

The hot solution must be quite clear after the addition of the soda, otherwise the crystals of sulphate obtained are mixed with uncombined alkali.

The sulphate should be dried over a water-bath, and not at a higher temperature, as I find that sulphate of quinine gains in weight from 100°C . to 140°C ., after that it fuses and loses weight till constant.

The utmost attention must be paid to detail in these analyses, owing to the high value of the material.

The Chairman asked Dr. Paul to open the discussion. Dr. Paul acknowledged that he had some experience in the analysis of bark; but he thought that gentlemen who had special experience in this branch of analysis, and from whom information would be valuable, were employed in such spheres as did not induce them to bring forward the results of their experience. Mr. Cleaver's criticism of such methods as had been proposed did not appear to be supported by facts or arguments. Mr. Cleaver condemned an official process, viz., the B. P. process, and another supported by Dr. De Vrij, an eminent authority, but he had not offered evidence in support of his opinions. Mr. Cleaver's method of percolation had been practised perhaps ten years, and it was positively inaccurate to say that quinine was soluble in ether and the other alkaloids insoluble, since the difference was only one of degree of solubility, all being soluble, and so with all the other characters of the cinchona alkaloids taken advantage of for the purpose of analysis. It was necessary to estimate the probabilities of the quantities one had to deal with, and regulate operations accordingly. The determination of quinine as given by Mr. Cleaver would be defective for this reason, that whenever the bark contained cinchonidine or quinine as well, the ether solution would contain these alkaloids as well as quinine and amorphous alkaloids; and therefore it would be a fallacy to evaporate such a solution to dryness and weigh it. Dr. De Vrij had also shown that the alkaloids precipitated from solution always contained an undefined substance, possibly quinic acid, to the extent of 10 or 15 per cent. of the total precipitate. Dr. Paul thought the only satisfactory way of determining the quinine was by crystallisation of the neutral sulphate obtained by dissolving the residue of the ethereal solution in dilute acid. By dissolving the alkaloids in ether, the quinine and cinchonidine were so far excluded that if a crystallisation were obtained from the water solution of the sulphate one might be sure that quinine was present. Dr. Paul thought the publication of Mr. Cleaver's paper likely to establish a mischievous precedent: the sort of work involved, to be of any real service, must be carried out thoroughly, and with a due regard to the importance of the result to be obtained, and not be hurried through with the intention of merely making a display. There had been great efforts made to put down the cramming system for examinations, but if the exercised spirit of cram were to be rehabilitated in the form of spurious research, there would be a still greater source of mischief to eliminate.

Mr. Linford found most difficulty in separating the crystallisable and uncrystallisable quinine. He based a process on the fact that amorphous quinine and crystallisable quinine were atomically the same: he therefore divided the quantity obtained into two

exactly equal portions, dissolved one in exactly sufficient sulphuric acid to make an ordinary acid sulphate, and then added the other part, and found that the disphosphate of amorphous quinine appeared quite insoluble in water. By adding sufficient boiling water the disphosphate of true quinine was dissolved, the other separating as a resinous mass at the bottom. The solution could then be crystallised.

Professor Redwood said his experience did not relate altogether to the class of barks which now principally came under the notice of the analyst. He thought it a pity Mr. Cleaver had not a little more confined himself to explaining his own process, leaving others to draw a comparison between it and those which had been proposed by men of great experience and eminence. He should also have distinguished between a process like that of the Pharmacopœia, which aimed at simplicity and the indication of the value of the bark for pharmaceutical purposes, and a process suitable to the manufacturer or merchant who wished to estimate the value of the bark especially in reference to its use in the manufacture of salts of quinine. He could not say he found in the process recommended anything likely to become practically useful in the hands of pharmacæutists. It would probably be far more suitable for the analysis of bark for commercial purposes, and, indeed, it resembled in many respects the method usually employed for the analysis of cinchona. Quinidine in conjunction with quinine and cinchonine constituted the great difficulty, as it was necessary to state the proportion of each. The process of mixing with lime, exhausting with spirit, and distillation, was known to him ten years ago. The alkaloids could not then be separated by a better mode than that with ether, in which all were, however, more or less soluble. Moreover, in the separation by crystallisation, if you had any quantity of quinidine present you could not sharply crystallise the quinine away from it, and much was to be judged by the manner as well as the result of the process. The presence of confusion had been introduced in consequence of the names applied to the alkaloids not always being used in the same sense. In speaking of quinidine he meant the alkaloid corresponding with quinine, which presented the greatest difficulties. There were four alkaloids capable of yielding crystalline salts—viz., quinine, quinidine, cinchonine, and cinchonidine. The first two corresponded in composition, and so did the latter two, and if they were always used in that sense it would greatly tend to simplify the subject. Dr. Redwood thought it was rather too much to attempt suggesting a mode of analysis which should be applicable in the hands of the ordinary chemist.

Mr. Unney did not think the process could be put in the hands of a pharmacist. Guillemond proposed taking, say, 100 grams of bark, thoroughly moistening it with spirit of a strength not exceeding $\frac{4}{5}$ overproof, heating it until the bark became quite soft, then throwing into it a quarter of its weight of hydrate of calcium, drying and powdering, transferring to a small percolator, and exhausting with successive small quantities of ether, whereby almost absolutely pure quinia was obtained, amorphous and crystallisable, which could be weighed after drying at 150°C . To go further, it might be dissolved in alcohol and treated with sulphuric acid and crystallised. He thought the standard of 2 per cent. of alkaloid in Calisaya bark, as mentioned in the British Pharmacopœia, was much too low, 3 per cent. being nearer the mark. If the treatment with carbonate of barium removed the colouring matter, a very important end was gained. He could not agree with Mr. Cleaver, but rather with Dr. Paul, about exhausting the mixed alkaloids with ether. An excess of ether would certainly dissolve the other alkaloids. He also thought Mr. Carles was nearer the truth than Mr. Cleaver as regards the relative solubilities of the mixed sulphates. As for the allowance of quinine lost in the waste waters, Mr. Unney reminded Mr. Cleaver that the presence of sodic or ammoniac sulphates had a great influence. Lastly, he regarded quinidine as a comparatively rare alkaloid, while cinchonidine was very common. This latter alkaloid was largely produced from the East Indian barks now being imported, and it was high time the difference between it and true sulphate of quinidine were understood.

Professor Atfield alluded to the severe criticism the paper had received, but admitted the necessity for more thorough and fitter work. But Mr. Cleaver had given something positive, whereas most of those who had criticised known processes, not excepting Dr. Paul and Professor Redwood, had confined themselves to a little talk about the positive and to the communication only of what was negative. When Dr. Paul rose he did hope he should find what he, as well as most chemists were

looking for, some positive information. He had been disappointed, and even Professor Redwood had forgotten to mention the processes he adopted. Mr. Cleaver, however, in the true spirit of science, had apparently stated all he knew on the subject, and he therefore deserved the thanks of all chemists and pharmacists.

Mr. Cleaver, in reply, said he would endeavour to profit by Dr. Paul's remarks. He stated that the quantity of bark ordered to be taken was too small, because 100 grains of Calisaya bark would often not contain more than 2 per cent. of total alkaloids, or 2 grains, and if there were a slight loss at each stage of the manipulation it would be very material at the end of the process. Another point was that in washing any alkaloid by water, a large quantity, comparatively speaking, was dissolved; the alkaloids were not very soluble in water containing free alkali, but they were perceptibly soluble in pure water. The cinchonidine he had spoken of throughout was the alkaloid isomeric with cinchonine. His process was devised chiefly in order to prevent this loss of alkaloid by washing; he did not claim any great novelty for it, but he did not think it was generally known before Dr. De Vrij published his process. Though the process might appear to take a long time on paper it did not occupy much time in practice. The reason he took carbonate of barium to saturate the sulphate solution was that carbonate of sodium was perceptibly soluble in the spirit afterwards used to extract the alkaloid, and then a correction had to be made for the carbonate of sodium. The carbonate of barium was perfectly insoluble, and it gave a liquid of a light straw colour; he had never found it at all dark. As to the amount of quinine sulphate in the wash water the quantities given were established by absolute experiment. He had not paid any attention to the statements in the text-books on this point.

The President said the society was indebted to Mr. Cleaver for bringing forward a paper on so important a subject.

Although most would agree that Dr. Paul clothed his censure of Mr. Cleaver's paper in rather severe language, we must confess that we are not surprised at the fact. The positive fallacies contained in the processes recommended would be enough to startle anyone having a practical acquaintance with the difficulties involved in the analysis of bark, and beyond that the best part of the process, viz., the exhaustion with spirit, and treatment with carbonate of barium, was only novel in respect to the latter and minor detail. The coolness with which Mr. Cleaver recommends an inexperienced person to exhaust the powder containing the mixed alkaloids with ether, evaporate, dry and weigh the residue as the total, or amorphous and true quinine alone, is also enough to disturb the equanimity of the most patient of practised analysts. The arithmetical formula given by Mr. Cleaver for the calculation of the proportion of the isomeric alkaloids by titrating the total alkaloids, and in which the weight of the latter forms a factor, is also a fallacy, so far as practice is concerned, which ought not to have originated with anyone having a practical knowledge of the variations met with in barks. All these errors are intensified by the assurance to be met with in almost every other paragraph of Mr. Cleaver's paper, to the effect that the results are accurate. Mr. Cleaver's own statements convey a conviction to the reader that the author did not even know how to ascertain the accuracy or otherwise of his results.

With his usual kindness Professor Atfield endeavoured to defend this unfortunate paper; but his defence ought not to have taken the form of an implied attack on other analysts, who, according to him, are not actuated by the "true spirit of science," if, for business reasons, they decline to state, at any moment when called upon, the special secrets of their profession. It is hardly to be expected that those who have spent years of labour, and perhaps much money, on any particular branch of analysis, should publish their processes for the benefit of all analysts just come into practice, who, "thirsting for information," or for such information as may reach their gratuitously, have neither the power, nor, in some cases, the will to make a suitable return.

The following was proposed by Mr. Holmes and seconded by Mr. Brownrigg—That the representatives of the society be requested to vote in favour of two grades, viz., pharmaceutical chemists and chemists and druggists.

The vote in favour of one grade only was carried by a considerable majority.

The President regretted the decision, and would be glad if the society generally did not find cause for regret.

The annual meeting of the Chemists' and Druggists' Society of Ireland was held at their rooms, 62 William Street, on Monday, November 8, Mr. E. M. Hodgson, President, in the chair. There was a large attendance of the members.

The principal business was the election of officers and committee for the coming year. The following were unanimously elected:—

President—Mr. E. M. Hodgson.

Vice-President—Mr. C. R. C. Fichborne.

Hon. Secretary—Mr. W. Hayes.

Assistant-Secretary—Mr. J. O'Brien.

Treasurer—Mr. Stanley Oldham (vice Mr. J. Goodwin, resigned).

Committee—Messrs. Allen, Birmingham, T. C. Grindley, Holmes, Greenfield, Simpson, Goodwin, and Froedman.

The committee was enlarged from six to eight, and two of the members were elected from the associate members.

The question of continuing the classes was brought forward, and was resolved to continue and extend them, also to secure more commodious rooms, with the view of establishing reading rooms, and, if the committee should think fit, conveniences for the study of practical chemistry.

The Treasurer's report was most satisfactory, showing a balance of about 100*l.* to the credit of the society after all liabilities were discharged. A cordial vote of thanks was given to the retiring Treasurer for his unremitting zeal in the interests of the society during the time he had held the office.

THE LEEDS CHEMISTS' ASSOCIATION.

ANNUAL MEETING.

THE thirteenth annual meeting of the Leeds Chemists' Association was held in the Library on the evening of Wednesday, October 13, the President, Mr. F. Reynolds, in the chair. The minutes of the last meeting of the past session having been read, Mr. Maude was elected a member, and Mr. S. N. Tredwell and Mr. Geo. Owen associates.

The Secretary then read the annual report. It stated that the feeling existing amongst the members during the year had been decidedly cordial and fraternal; the attendance at the evening meetings somewhat better than of late years; the library had been freely used for reference, and the number of students attending the classes on chemistry and botany moderately good; still it was much to be regretted that a town like Leeds, where the chemists numbered nearly one hundred and fifty, the association did not receive a much larger amount of support, and that its numbers were not very much greater. It numbered at present forty members and forty-six associates, showing an increase of one member and a decrease of ten associates as compared with the previous year. During the year the committee had expended upon new books and periodicals for the library the sum of 6*l.* 10*s.* 4*d.*, a large portion of which had been taken up in replacing missing volumes and periodicals. They therefore put it to the honour of each one taking out or returning books to the library to correctly enter them in the book kept for that purpose upon the library table. Notwithstanding this extra drain upon their resources, and the falling-off in subscriptions, the expenditure of the association during the year had been kept within its income, leaving a few shillings in the hands of the secretary in its favour. During the previous session there had been held eleven general meetings, the first of which was occupied by the annual business of the association; the second by a tea and social gathering of the whole trade; and the remaining nine by papers on scientific subjects connected with the art of the chemist, several of which were read by men ranking high in the walks of science, and were of a very superior character. Classes in chemistry and botany had been provided for the associates, under teachers connected with the Science and Art Department, South Kensington. Twelve attended the

one on chemistry, eleven of whom succeeded in obtaining first or second-class certificates, and one a Queen's bronze medal; and eighteen attended the one on botany, five of them obtaining second-class certificates. On taking a general view of the position of the association the committee were satisfied with the soundness of its condition, and sanguine of its ultimately occupying a much higher position in its own town, and amongst its kindred societies throughout the country.

The report having been adopted, the election of officers and committee for the ensuing year took place, the voting being, as usual, by ballot, Messrs. Abbott and Ellison acting as scrutineers. The result showed that the following gentlemen had been elected, namely:—President, Mr. Edwin Yewdall; Vice-President, Mr. Peter Jefferson; Treasurer, Mr. John Land; Secretary, Mr. Samuel Taylor; Librarian, Mr. E. O. Brown; Auditor, Mr. E. S. Payne; Committee, Messrs. Edward Brown, Freshfield, Reynolds, J. W. Longley, Jos. Boedle, John Hollowell, and Whitwell Mansfield.

The new President, having taken the vacated chair, expressed his gratification at the honour conferred upon him, and proposed a vote of thanks to the retiring officers. Mr. Iredale seconded the proposition, which was carried by acclamation, and responded to by the late President on behalf of himself and brother officers.

"The best thanks of the Association" were then presented, "to the Council of the Pharmaceutical Society for the grant of twenty-five pounds for general educational purposes. Still reserved, and for the unanimity with which it had been voted," on the motion of Mr. Abbott, seconded by Mr. Longley. The thanks of the association were also given to the Pharmaceutical Society for the gift of the journal during the past year, and to the Pharmaceutical Conference for the "Year Book of Pharmacy," proposed by Mr. F. Reynolds, seconded by Mr. Ellison.

Mr. Yewdall then, in a short paper, introduced for discussion the new "Sale of Food and Drugs Act." A short discussion ensued, but the hour being then somewhat late, it was adjourned to a future evening.

The second general meeting of this association for the present session was held on Wednesday evening, October 27, in Blackburn's Dining Rooms, Boar Lane; and, as usual of late years, was of a social character, but differed from previous similar gatherings in being confined to the members and associates of the association only, instead of being thrown open to the trade generally. The company, numbering fifty-seven, after inspecting a small exhibition of microscopes, kindly lent for the occasion by several of the members, sat down to an excellent tea, after which the Secretary read the minutes of the last meeting. These being duly confirmed, a letter was read from Mr. Schacht, of Bristol, to Mr. Brown, one of the committee, commending the association for making an appeal to the Pharmaceutical Society for a grant of 25*l.* for educational purposes, and wishing it God-speed in its work.

The President (Mr. Yewdall) then delivered the Annual Address.

After a retrospective glance at the work accomplished by the association, and a few comments on other local subjects, Mr. Yewdall turned to the consideration of topics of general interest. With the commencement of the present month [he said] the "Sale of Food and Drugs Act, 1875," became law, and although I ventured to bring its provisions before the annual meeting, yet, as the discussion is adjourned to another evening, I offer no excuse for again laying it before you, especially as one or two of its sections are of such a character that it is of the greatest importance to avoid a first conviction. After defining the meaning of the word "food," which is to include every article used for food or drink by man, other than drugs or water, and the term "drug" to include medicine of every description for internal or external use, the Act directs that if any person shall mix, colour, stain, or powder, or order or permit any other person to mix, colour, stain, or powder any article of food with any ingredient or material, so as to render the article injurious to health, with the intent that the same may be sold in that state, or shall sell any article so mixed, coloured, stained or powdered, he shall for the first offence be liable to a penalty not exceeding 50*l.*, and every offence after a conviction for a first offence shall be a misdemeanour, for which the person on conviction shall be imprisoned for a period not exceeding six months, with hard labour. It is very important you should observe that although a magistrate has the power to mitigate the fine, he cannot prevent the second offence making the offender liable to be committed to prison with hard labour. Under this section, I presume, ground pepper, spices, ginger, and rice may be included, though

much depends upon the manner in which the information is laid. Let us suppose a case: Assume a specimen of ground white pepper is found to be adulterated with pea flour, if the information is laid under the 3rd section it will be necessary to prove that pea flour is injurious to health, an assertion which those who are fond of pea soup would scarcely support; but suppose it is called a "drug," then it comes under the 4th section, wherein it is directed that "no person shall, except for the purpose of compounding as hereinafter described, mix, colour, stain, or powder, or order or permit any other person to mix, colour, stain or powder any drug with any ingredient or material so as to affect injuriously the quality or potency of such drug, with intent that the same may be sold in that state," under the same penalty in each case respectively as in the preceding section for a first and subsequent offence. Here the word "potency" might be of service, inasmuch as the presence of the pea flour would certainly reduce the pungency or strength of the peppers; or if it is designated "pepper," it would then come under the 6th section, which says, "No person shall sell to the prejudice of the purchaser any article of food or drugs which is not of the nature, substance, and quality of the article demanded by such purchaser." If the purchaser asked for ground white pepper, and obtained a mixture of pepper and pea flour it cannot be said that he has been supplied with the article he asked for; the penalty under this section is a fine not exceeding 20*l*., and does not make the offender liable to imprisonment for a second or any subsequent offence. It may be well to ask, who is meant by the word "person"? Is an employer to be considered guilty of an act committed by his servant? Suppose a man purloined a part of the goods committed to his care for powdering, and to make up the quantity added another ingredient, would the servant or employer be considered the "person" here referred to? If the employer was charged he might, by proving his absence at the time, seek exemption under the 6th section, which says, "That no person shall be liable to be convicted if he shows to the satisfaction of the court that he did not know of the article sold by him being adulterated." And thus the principal offender escapes the punishment he deserves. By the 6th section certain exemptions are allowed where a drug is unlawfully mixed with some "extraneous matter" in the process of "collection" or "preparation." It may be a little difficult to understand also what is intended by "extraneous matter." In the case of gums, oleoresins, and roots, it refers to the substances with which these articles may have been mixed during their collection. How will it apply under some circumstances to manufactured goods? In the early part of the year, Dr. J. C. Brown, of Liverpool, intimated that much of the citric acid of commerce contained lead; this statement induced me to examine some then in stock which had been obtained from a highly respectable source, and it was found to contain a notable quantity. It was evidently the result of using leaden vessels or vessels lined with lead, and therefore, as it had probably not been observed previously, might be considered as "extraneous matter." Five samples of oxide of silver obtained from different makers have lately been examined, and all contained chlorides; would the presence of the chloride be considered undesirable? At the annual meeting I ventured to suggest that acetate of lime would be considered as an adulteration if found in acetic acid, but as its presence is due to process of manufacture it might be considered "extraneous matter." These and many other questions will no doubt have presented themselves to you. It is not necessary to enter into the question further to-night, as it is so shortly to occupy our attention again, when I hope there will be a good attendance of all interested. May I suggest that if every member will examine the various articles he has in stock, and when he meets with any containing impurities, whether of manufacture, collection or admixture, bring it to our evening meetings, or any practical hints obtained during such examinations, we shall have no cause to regret that the Adulteration Act has become law, each having thereby been stimulated to further research. The retailer may shelter himself from the penalties of the Act if he obtain a written guarantee from the wholesale dealer of whom he purchased the goods that they are genuine. The growing tendency of consumers' juries to make unpleasant insinuations when a retail chemist is found to have supplied a poison by which some person, evidently intent upon committing suicide, has come to his death, suggests the necessity of our considering whether some means should not be adopted for making the coroners more thoroughly acquainted with the spirit and intention of the Pharmacy Act. It is evident, when its provisions have been carefully fulfilled, no blame can be

attributed to the chemist, whilst unmerited censure might seriously injure his commercial prospects. Mr. Yewdall concluded by urging on the associates the importance of losing no time in their studies in their early life.

Mr. P. Jefferson, Vice-President, expressed the pleasure he felt at seeing such a goodly number present, but regretted the absence of the ladies, whose presence, he thought, added much to the enjoyment of such occasions. He also hoped that this social gathering would continue to be held as a tea-meeting, and not degenerate into the form of an annual supper, where fermented liquors would be drunk; such entertainments being prejudicial to the best interests of all, but specially of the young.

Mr. Smeeton then said a few words impressing upon young men the necessity of diligence in their studies.

Mr. Ward introduced the suggestion of Mr. Schacht and others that a pharmaceutical laboratory should be established at Bloomsbury. He thought the question an important one, demanding the expression of local opinion. He ridiculed the notion of the society becoming traders by establishing a laboratory of small apparatus for the instruction of students in practical pharmacy, apparatus of large size being necessary for the manufacture of pharmaceutical preparations for trading purposes. Many processes in pharmacy might be well illustrated by models, and by these, questions of room and expense would be greatly reduced; the models, however, should not be too small. As a chemical lecturer, he would say there were many pharmaceutical operations which could not be taught in a chemical laboratory. He thought the suggestion contained a germ worth cultivating, and as practical pharmacy was largely engaging the attention of the trade at the present time, he should decidedly favour the establishment of a laboratory of good working models.

Mr. Brown complimented Mr. Yewdall on his long and ardent devotion to the interests of the association, and was glad to see him at last in his proper position as President. He agreed with Mr. Ward as to the utility of models in imparting instruction, and as accurate standards of apparatus were the desire of the day, he thought the Pharmaceutical Society would do well to establish a museum of the best and latest types, many of which would probably be supplied gratuitously by makers.

The third general meeting was held on Tuesday evening, November 9, when Mr. Yewdall again presided. Two new members and nine associates were elected, after which Mr. Geo. Ward, F.C.S., delivered the first of a course of six lectures on practical pharmacy which he has engaged to read before the association during the present session, taking for his subject on this occasion, "The Determination of Weights, Bulk, and Specific Gravity of Bodies."

LIVERPOOL CHEMISTS' ASSOCIATION.

TWENTY SEVENTH SESSION, 1875-6.

OFFICERS:—President, Mr. Alfred H. Mason, F.C.S.; Vice-President, Mr. Edward Davies, F.C.S.; Hon. Sec., Mr. Thomas Williams, F.C.S., 21 Lord Street; Hon. Treasurer, Mr. Robert Sumner; Council, Messrs. Armstrong, Abraham, Jones, Murphy, Parnell, Redford, Shaw, and Woodcock; Teacher of Pharmacy, Mr. Thomas Williams, F.C.S.

The first general meeting of the session was held at the Royal Institution, October 21, 1875, the President, Mr. A. H. Mason, F.C.S., in the chair.

The following donations to the library and museum were announced:—Current numbers of the *Pharmaceutical Journal*, the *American Chemist*, the *Canadian Pharmaceutical Journal*, *Muster Zeitung*, "Proceedings of the Liverpool Geological Society," &c.; a specimen of very fine crystals of iodide of potassium, collected by Mr. W. F. Best, F.C.S., and with glass shade, presented by Messrs. Atkinson & Co, London; specimen of nitrate of picric acid, the new alkaloid of jabardani, from the discoverer, Mr. A. W. Gerrard, University College Hospital, London; thirty-two specimens of chemicals and pharmaceutical preparations, including a very fine specimen of glacial phosphoric acid, from Messrs. T. Morson & Sons, of London, who intimated that they intended to extend this collection to about a hundred specimens, amongst which would be some recent novelties.

Dr. Symes presented a sample of araroba, or Goa powder, and

November 15, 1875.]
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described its use and origin. Araroba, or Goa powder, is a substance which has gained a reputation in the East Indies for the cure of certain skin diseases. It is the produce of a tree growing in Brazil, and is evidently deposited in the heart wood during growth. It has been imported into this country from Bahia in casks of about 1 cwt., and cases of 200 lbs. weight each. As it arrives it is in lumps, mixed with fragments of wood. In powdering it is liable to produce great irritation to the eyes, nose, and throat. It has already been used with some success in this country.

Thanks were voted to the donors, with special votes to Messrs. T. Morson & Sons and Mr. Gerrard.

Mr. Alfred C. Abraham was elected a member.

A very large number of questions was found in the question box, some of which were answered at once, the remainder adjourned to the next meeting.

A discussion took place as to the advisability of altering the hour of meeting, and it was finally resolved to commence at 7.30, instead of 8 o'clock, as hitherto.

The President then read his inaugural address—

PRESIDENT'S ADDRESS.

Gentlemen—My first duty is to thank you for the honour your council has conferred upon me, in re-electing me as your President for the session we are now inaugurating, the twenty-second session of our association. With your permission I take this renewal of your confidence as an appreciation of my efforts to further the interests of the association during the past session, and with this stimulus, I beg to assure you that my best attempts to serve you with those abilities with which Providence has favoured me will again be placed at your disposal. My next duty is to deliver an inaugural address, and I purpose this evening directing your thoughts to a subject which to my mind appears a suitable one, and by the consideration of which, I trust, we may all profit, viz. —

Chemical Investigation as an Adjunct to the Development of Medical Art.

It is necessary, perhaps, in the first instance to look back to the early history of the healing art. I shall do this summarily. My principal objects, in bringing before your notice recent therapeutic agencies which are now coming into frequent use, and which owe their origin to direct chemical investigation, the action of which in many instances depends upon chemical reactions and decompositions.

From the antiquity of the medical art, it is strange how little of value in practice has come from any remote period. Long after sculpture and architecture had attained an excellence which has not since been approached, and literature one which, to say the least, has not been surpassed; after the republics of Greece had furnished the models of all future commonwealths, and the Roman law of all future jurisprudence, the art of healing was in its infancy. It was limited to a few of the more obvious of the mechanical expedients of surgery, hot iron or boiling pitch, where hemorrhage was incurred, playing the part of the ligature, and to the administration in a somewhat irrational and arbitrary manner of a variety of herbs, many of which are still in use, but of which the poppy is perhaps the only one which could not be spared.

Absolutely ignorant of pathology, the ancients knew disease only by its symptoms, and were guided in the application of remedies by pure empiricism, or in other words, by luck, chance, and random experiment. They were seldom directed by any real knowledge, either of the nature of the disease or the action of the drug; they were, however, observant and cautious, and used their scanty information with a good sense which does not seem to have been transmitted to some of their mediæval successors.

Century after century passed without progress, because there was not any knowledge upon which rational conjectures could be founded. For a thousand years of stagnation the writings of Galen, the great compiler of ancient physic, sufficed to contain the medical knowledge and most of the medical errors of the world. For a long time his books were looked upon as the ultimate appeal in medical questions, and carried as much authority as if credited with inspiration.

The mediæval physician was an alchemist, an astrologer, and, in the fashion of his time, a spiritualist. He is easily recognised in old engravings with his celestial globe ready to his hand, and his portrait bordered with the signs of the zodiac. When he was to use a modern term, summoned to a case, he studied the heavens at the figure of the decumbiture, or the posi-

tion of the stars when the patient took to his bed, and formed his prognosis, not so much from the state of the patient as from the state of the sky. In directing the treatment he had regard to the planetary connections both of the organ he supposed to be affected, and of the medicine he proposed to prescribe. Physicians of the present day pay tribute to his memory when they head a prescription with the mysterious figure, commonly mistaken for B, to abbreviate recipe, but really the astrological sign of the planet Jupiter, once intended as a direction to the herbalist to collect the ingredients under the influence of that planet.

In many other instances the influences of the mediæval physician may be traced to the present time, but we must move rapidly on, and come to later days and different modes of inquiry to advance the medical art. The physician must never be unmindful of his obligations to the old astrologer and alchemist. In his search for the philosopher's stone and the elixir of life he tortured nature until it gave up, if not the rudiments of chemistry, at least the errors from which those rudiments have sprung. His whole system was erroneous, but his was the error which fathers truth, but the truth was born late. It was not until the middle of the seventeenth century that Sylvius pointed out the antagonism of acids and alkalis, without which discovery our physicians would be at a loss in dealing with some of the complaints that most frequently plague mankind. The absence of direct chemical knowledge in these olden days is well illustrated in the following quaint prescription, which was written by a famous London physician, A.D. 1643; it is headed, "Remedy against Fever, Poysons, Small Pox, the Plague, and such like."

"B. In the month of March take toades, as many as you will, alive, putt them into an earthen pott; cover it with a broad tye, then overwhelm ye pot, so ye bottom may be uttermost; putt charcoalles round about it, and in ye open ayre, not in an house, sett it on fire; when cold take out ye toades, and in an iron mortar pound them well and tearce them (whatever that may be), a black powder will be the result. Of this you may give a dragma inwardly in any affection. For prevention, half a dragma will suffice. Moderate the dose according to ye strength and ye constitution of ye partie."

Our pharmacists would hardly appreciate such instruction in the present day, the method of modern medicine being, fortunately for the patient and prescriber, much simplified.

In the progress of the sciences which underlie all comprehension of health and disease the last hundred years since, Priestley and Scheele's discovery of dephlogistated air, the precursor of oxygen, may well outweigh all that have preceded, and the last few years of chemical investigation have done more than all that preceded them, by putting the physician and the pharmacist (for we must not forget that it is for the pharmacist to develop the chemical art, to enable the physician to develop the medical art) in possession of such fundamental and essential facts, and bringing about such practical issues, that they may well be looked upon as rich in promise for the future health and happiness of mankind. In former times sponge, when calined, was known to have a specific therapeutic action. A few years ago it was shown to possess a portion of the heat now so rare and so valued, which had first been detected in the ashes of seaweed by M. Courtois, in 1812. What an important adjunct this element is now to the healing art. Notably the physician has his iodide of potassium, and increasing experience or pure empiricism tells him what symptoms call for its use.

Chemical investigation has also produced alkaloids, active principles, resins, &c., which may easily be dispensed, for internal, subcutaneous, or external application, and thus obviate the nauseous and irritating draughts which formerly had to be administered, giving a large portion of foreign and disagreeable elements to secure the specific which was required.

I have already referred to the poppy as one of the earliest remedies which could not be spared nowadays. The antiquity of the influence of this plant is without dispute. Homer and Hippocrates both mention it; it was known to the Arabs and Persians. What has chemical investigation done for the physician here? The pharmacist of the present day has from the capsules of the poppy his decoction, extract, and syrup, and the physician relies upon these for the active principles which chemical investigation has shown to be present. These all being present in opium, which you are all aware is the inspissated juice obtained by incision from the unripe capsules of *Papaver Somniferum*, we will consider this product more fully.

Several analyses were made of opium before any just ideas

were obtained respecting its constitution. Derosne in 1803 first obtained a saline body. Serturner and Seguin, the first a Hanoverian, and the second a French apothecary, both discovered in 1804 another crystallisable substance, upon which subsequent experience has proved the narcotic power of opium to depend. In a second memoir of Serturner, published in 1817, he announced his discovery of the existence of morphia combined with meconic acid. This was confirmed by Robiquet. Since then, Geiger, Belz, Pelletier, Courbe, Schmidt, Mulder, Brown, Smith, Wright, and others, have analysed opium, and shown it to consist of a variety of principles, and derivatives from these principles, many of which have a specific therapeutic action. Of these I have twenty-two specimens on the table, viz:—

Dicalcic Meconate,	Narcæine,
Meconic Acid,	Thebaine,
Comenic Acid,	Papaverine,
Morphia,	Meconine,
" Hydrochloride,	Narcotine,
" Hydrobromide,	Methylnarcotine,
" Meconate,	" Chloride,
Nitrocomorphine,	Dimethylnarcotine,
Apomorphia Hydro-	" Chloride,
chloride,	Opimic Acid,
Cocleia,	Hemipinic Acid,
Chlorescodide,	

distinct and purely chemical bodies, giving abundant evidence of what chemical investigation has done for the healing art, and showing its dependence thereon. Of course these do not exist in all samples of opium from any source, nor with these even must we suppose that chemical investigation has finished with the products of the poppy. The laborious and wonderfully patient investigations of Dr. Wright on the derivatives of morphia and codeine have produced some hard names, which it would only be tedious to you for me to enumerate, and the isolation of apomorphia has resulted in its being shown to possess a therapeutic action almost invaluable. Its chloride is the most certain and the most speedy emetic known: the tenth of a grain or even less is the dose required. It may be given safely to children, and acts more rapidly when hypodermically administered than when given by the mouth. It has been already shown that no after ill-effects follow the administration of this medicine, and if it should have no other medicinal value than as an emetic, it will be a most important addition to the *Materia Medica*. No other emetic can be administered hypodermically; and all others are bulky in dose, very uncertain in action, and produce distressing nausea and depression.

I cannot pass over this subject without alluding to the removal of one who for many years laboured with great patience, most enthusiastically, and, without any ostentation, experimented upon these principles of opium. He has passed away since our last session. A just tribute is paid to the memory of the late Mr. David Rennie Brown, of Edinburgh, in the *Pharmaceutical Journal* of September 26. I remember with gratitude his explaining to me the results of his investigations and pointing to a shed in the yard at his laboratories to a heap of what we should perhaps call rubbish, the residue of all the opium used during his career, and saying that he would not have it removed, for he believed there was a great deal left in it yet. Codeine has been isolated since that accumulation was saved, and there remains that principle in it. His son successfully continues those labours, and I desire to record my thanks to him for providing me with the specimens on the table, manufactured in the laboratories of Messrs. J. F. Macfarlane & Co., of Edinburgh.

You are all aware that there are many varieties of cinchonas, and that their physical characters are chiefly important as indication of their richness in the principles which make them so valuable as medicinal agents. In 1802 so little was known of these that Seguin concluded that the active principle was of the nature of gelatine. In 1803 Dr. Duncan detected a new principle, which he named cinchonine, which was isolated by Gomez in 1810. In 1820, Pelletier and Caventon discovered quinine, and proved that this and cinchonine were alkaloids combined with kioic acid; subsequently, Pelletier and Coriol discovered a third alkaloid, aricine; Winckler discovered quinidine, and recent investigations of Howard, Hesse, Vrij and others have further cleared up the chemical constituents of the cinchona barks, and we now have quinine, quinidine, quinoidine, cincho-

nine, cinchonidine, aricine; and further, more recently we have introduced the whole of the alkaloids of East India bark combined, forming "quinetum." Analysis of this shows it to be a mixture of quinine, cinchonine, cinchonidine, and amorphous alkaloid in indefinite proportions, and to my mind it is not a satisfactory product; on the other hand, "quinetum sulph." is a mixture of sulphates of quinine, cinchonidine, and cinchonine, containing about 20 per cent. of sulphate of quinine. The question in this case, whether isolated alkaloids have a specific action which is not so desirable or valuable as the combined alkaloids, is one which has yet to be decided by medical art. Certainly, quinine has proved a specific, and has been a favourite for a long time. If the combined alkaloids should prove more efficacious, commercial interest will have done good innocently. I have selected these two examples as the more prominently illustrating the important results which have been attained by the proximate analysis of vegetable substances, and for the production of which principles our country stands pre-eminent.

During the past twelve months no medicine has caused greater interest than "jaborandi," which, you will be aware, is a plant of the natural order Rutaceæ, imported from the Brazils, and said to be the *Pilocarpus pennatifolius* of Lemaire. Chemical investigation has been busy here, and Mr. A. W. Gerrard, of the University College Hospital, London, has discovered and succeeded in isolating the active principle and alkaloid which he has named pilocarpine. The physiological experiments with pilocarpine have shown it to possess properties identical with those of jaborandi, a much smaller dose producing the full effects obtained by the use of the plant itself. Mr. Gerrard has kindly sent to me a specimen of nitrate of pilocarpine for our museum. We thank him for this, and congratulate him upon the success of his labours. As this substance has not yet been examined chemically, it is an interesting subject for further research.

Coto bark is the latest vegetable product to which medical attention has been called: it is reported to be a specific against diarrhoea in its most diverse modifications. It is also a reputed remedy for rheumatism and gout. In reading the results of Dr. Willstein's chemical examination of this bark, it is remarkable to note that one of its constituents is a "volatile alkaloid having a herring-like and urinous odour, and resembling propylamine or trimethylamine. This latter chemical body is now being largely prepared from herring-bone, and is in demand for medicinal use as a remedy for rheumatism.

Chemical investigation has, however, gone much further to develop medical art than in the instances to which I have called attention. Organic compounds have been introduced which are decomposed in the organism, and thus liberate in active form principles they contain—viz., the compounds of iodine with the alcohol radicals. It has been shown that the iodides of methyl and butyl in solution, administered internally, or by way of subcutaneous injection, have specific action upon the glandular system.

We cannot consider this subject without passing high eulogiums upon the chemical investigation of eminent medical men—more especially in later years. I allude to the investigations of Simpson, Richardson, and Liebreich. Chloroform, nitrate of amyl, anæsthetic ethers, hydrate of chloral, and hydrate of croton chloral, have proved invaluable in their applications to relieve the sufferings of mankind. Chloroform, which enables us, without pain or fear of pain, to undergo those evasions and dismembersments which the surgeon regards with so much equanimity, and the patient with so much disquietude. As the corollary to chloroform, the fact that hydrate of chloral (recently only a chemical curiosity), introduced into the system, by contact with the alkalies of the blood, produces, when swallowed, effects like those of chloroform when inhaled, has brought to light a new and now indispensable chemical—narcotic and hypnotic—besides its being a valuable adjunct to antiseptic surgery. Croton chloral hydrate, another chemical substance, is coming largely into use, as a specific in obstinate forms of neuralgia, diffused muscular pain, and the distressing night cough of chronic phthisis. Nitrate of amyl has proved a specific in "angina," and perhaps no recent chemical investigations have done more to relieve human and animal suffering than those of Dr. Richardson, of whom we as Englishmen have every reason to be proud.

Time will not permit my entering into the details of what chemical investigation has done for antiseptic surgery, with carbolic acid, boric acid, salicylic acid, borosalic acid, and others, or the help that chemistry provides to prevent contagion

November 15, 1875.
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and putrefaction with disinfectants, deodorisers, and antiseptics; but all these at the present time are absolute essentials to develop the medical art, for we must prevent as well as cure, bearing in mind the old adage that "prevention is better than cure."

A great deal has been written for and against salicylic acid since Kolbe produced it artificially, so much so that not only amongst medical men, but whenever antiseptics are required, experiments are being made with it. It has occurred to me that the divided opinions as to its disinfecting properties may be due to the fact that it is difficult to obtain carbolic acid free from cresylic acid: if such an acid were used to manufacture the artificial salicylic acid, the ultimate product would be a mixture of salicylic and cresotic acids and disinfecting properties might be due to the latter. This is only conjecture, which I cannot verify by experiment. Kolbe's process for manufacture is now patented. I am informed that this acid is to be used under authority on board ships for keeping drinking water sweet and wholesome. For medical use I should think it advisable to use the natural salicylic acid obtained from oil of wintergreen, as more reliable.

The administration of phosphorus is an important subject for investigation, and although chemistry has done a great deal, a thoroughly reliable method has not yet been suggested.

Before concluding this part of my address I wish to call your attention to the elaborate and scientific paper of Dr. Thudichum, read before the Medical Society of London in February last, on the "Chemical Statics of the Brain." This paper showed careful chemical research and laborious investigation. He premised that the study of brain statistics lay at the base of the physiology and pathology of the structure, and that without a knowledge of the chemical relation which its various principles bear to one another we should never arrive at the laws for the administration of those medicines which act on the brain. Dr. Thudichum enumerated four groups of chemical principles which he had isolated from brain matter. 1. The albumen group, which was only represented to a small extent. 2. The phosphorised group, of which cephaline was a type. 3. The fatty group, in which neither phosphorus nor sulphur was present. It embraced cerebina, phrenosina, and kersina. 4. The cholesterine group, besides these inorganic salts here mentioned. He made the very interesting and important discovery that copper exists naturally in the brain of all animals. A single brain, burnt in a platinum vessel, shows copper easily by treating the ash with ammonia.

The reported discovery of a new chemical element, "gallium," by M. Lecoq de Boisbaudran, and the isolation of hypochlorite of calcium by Kingzett are perhaps the only interesting chemical novelties brought to light during our recess.

I fear I have already trespassed upon your patience. Permit me, in conclusion, to refer to the proposed work of the coming session. It is matter of regret that your council, for the present, are compelled to discontinue the classes held under their auspices in the School of Pharmacy connected with our Association; but it is their misfortune, not their fault. During the presidency of Dr. Symes, the council used every means to endeavour to bring students to avail themselves of the opportunities afforded them; but without success, and as it was intended then as a final attempt you cannot wonder at your council being disheartened when only three or four candidates apply for admission. There are, fortunately, however, many opportunities in this town for young men to obtain a knowledge of chemistry. The laboratory at the Royal Institution is still at the disposal of those who wish to study practical chemistry with Mr. Davies, F.C.S.; the schools of chemistry in Duke Street, under the superintendence of Mr. Murphy, F.C.S.; and Hackins Hey, under the superintendence of Mr. Tate; and I hope our associates will avail themselves of these opportunities.* I remind them of our excellent library and museum, which is for their use in this building.

From the note issued with the circular calling this meeting, you will see that it is proposed to have some original papers read of a distinctly chemical nature at the general meetings of our association. Mr. Thomas Garside, F.C.S., will read the first, November 18, "On the Organic Constituents of Sewage." Mr. James T. Armstrong, F.C.S., will read the second, December 16, "On New Methods for the Chemical Examination of Oils." In January, Dr. J. Campbell Brown, F.C.S., will read a paper about water analysis. Other papers are promised, and I hope

some of our more distinguished pharmaceutical members will come forward and illustrate their science. Botany seems to have been deserted altogether by us. A botanical paper will be most acceptable. The intermediate evenings will assume the nature of a conversation; by this we mean meetings where exchange of ideas may be made between younger members of our association. Especially short papers, or communications of general interest, will be very desirable; but please remember that these meetings are not for younger members only. A large amount of information must of necessity be acquired in the several chemical and pharmaceutical laboratories in this town: most of this might be communicated to this association at these meetings, and even published without injury to those immediately concerned. This is especially true of analytical methods, and I think the publication and discussion of these would do much to remove the disgrace to which the science is often subjected by the wide discrepancies of analysts. Early in January we hope to hold a public conversation, at which a lecture will be delivered by some eminent scientific man, and objects of scientific interest, &c., will be exhibited. We have not had a public conversation since 1871, and I think that the Science Lecture Association, though unfortunate, has perhaps paved the way for the lecture to be successful with us.

In conclusion, gentlemen, I am sure it is not necessary for me to remind you that to have a successful session it is essential for every individual member to determine to make it such. Remember that "union is strength," and that if some half-dozen members are to do the whole work of the session, as has often been a necessity, it is not fair for you to blame those who have done the work, or to charge them with being a clique, when you will not take up your share. Gentlemen, I rely upon your support, and I ask you for it. I, for my part, am desirous to do my utmost to further the interests and advancement of our association. I am deeply sensible of the renewal of your confidence, and again thank you.

Mr. Murphy moved, "That the best thanks be given to the President for his instructive and valuable address." He did this with much pleasure, as the address was one showing more than ordinary thought and research, and because, in addition to this excellent address, the President had been unwearied in the past in his efforts to improve the position of the association.

Mr. Abraham said a more interesting or talented address had never been delivered before the association, and he had much pleasure in seconding the vote.

The vote being carried with loud acclamation, the President returned thanks, and the meeting closed.

The second general meeting was held on the 4th inst., the President, Mr. A. H. Mason, F.C.S., in the chair.

Dr. J. Campbell Brown, F.C.S., and Mr. Edward Forbes Morton were elected members.

Several donations to the library were announced, and thanks accorded to the donors.

Several inquiries were found in the question-box, the replies to which elicited much valuable information from those present.

Dr. J. Campbell Brown, F.C.S., exhibited M. Gramme's new electro-magnetic machine. The construction and capabilities of the machine were fully explained and illustrated by several ingenious and successful experiments.

There was a large attendance, and in the discussion which followed several members took part. A vote of thanks was unanimously accorded to Dr. Brown, and the meeting close.

At the next meeting, on the 18th inst., an original paper will be read by Mr. Thomas Garside, F.C.S., public analyst of Southampton, "On the Organic Constituents of Sewage."

MANCHESTER CHEMISTS' AND DRUGGISTS' ASSOCIATION AND SCHOOL OF PHARMACY.

The seventh annual meeting was held in the rooms of the association, Blackfriars Street, on October 12, Mr. W. Scott Brown, President, in the chair. The Hon. Secretary, Mr. F. Baden Bengler, read the annual report, which indicated an improved condition of affairs:—"When, immediately after the passing of the Pharmacy Act in 1868, the association was formed, a ready acceptance was given

* The council have since decided to continue the chemistry classes, and have made arrangements accordingly.

to the invitation issued by the executive committee to the chemists of the district, and the first annual report showed that 142 members and 138 associates had paid their subscriptions. It was scarcely to be expected that in the absence of any powerfully exciting events, such as that referred to, the long-cherished feelings of mutual distrust, and the desire for isolation rather than friendly intercourse which prevailed, could be easily removed, and there was perhaps not much cause for surprise when it was found that some members every year fall back into the old habits, and broke their connection with the association. In spite of this discouragement the council have year after year done all that the means placed at their disposal allowed to promote the higher scientific education of assistants and apprentices, in fact, to found a School of Pharmacy in Manchester, and to carry out other secondary though highly important aims likely to benefit the whole trade, and this year they have to report a turn in the tide. The list of paid-up members has suddenly risen from 80 to 121; the number of associates is 65, being rather fewer than last year.

"This very marked improvement is perhaps largely due to the liberal response made by the Pharmaceutical Council to the application conveyed through your President for a grant to supplement the students' fees. Encouraged by this ready sympathy and assistance, many members of the trade have willingly enrolled themselves when called on, and your council trust others will follow their example, for it is difficult now to understand the position of those who still decline to bear their trifling share in the maintenance of an association to which they freely admit they are greatly indebted."

The Treasurer's statement showed a balance of 10*l.* 12*s.* due to the Treasurer, but this was 70*s.* less than at the commencement of the year.

The following courses of lectures to associates have been commenced by Mr. Siebold:—

Chemistry.—Thirty lectures on Friday evenings. Fee 30*s.*
Materia Medica and Pharmacy.—Twenty-five lectures on Tuesday evenings. Fee 25*s.*

For students attending both courses, fee 50*s.* The Botany class has been postponed till after Christmas.

The report also referred to the fact that Mr. Naylor, a former associate and prizeman in the Manchester classes, had distinguished himself and reflected credit on the character of his early teaching by carrying off the silver medal in the Chemistry class, and the bronze medal in that of Practical Chemistry, at the School of Pharmacy of the Pharmaceutical Society.

The President moved and Mr. Slugg, F.R.A.S., seconded the adoption of the report, and Mr. Louis Siebold read a report on the several classes, which showed that nineteen students had attended the Chemistry course, thirteen the course on *Materia Medica and Pharmacy*, and eleven the Botany course, making a total of forty-three entries. The attendance throughout the session had been good, and a satisfactory progress had been made by the students, most of whom had never attended any previous courses. The number of students was nothing to boast of, but considering that the fees were now as high as, with a few exceptions, they had been, the result was quite satisfactory. Previous experience had convinced him that by charging very low fees a much larger attendance of students could be secured; but he was nevertheless of opinion that the council had acted wisely in fixing the charges as they had done, for the students were beginning to see that they ought to pay a fair price for the instructions they received, and he had no doubt that with the fees as they now stood, the attendance in the course of a few years would be such as to make the school self-supporting, an end greatly to be desired. As in previous years, examinations were held at the end of the session, and prizes awarded to the successful competitors. The Chemistry prize was gained by Mr. C. Challiner, the *Materia Medica* prize by Mr. R. T. Slinger, and the Botany prize by Mr. W. C. Crowther.

Mr. Siebold also stated that twenty-two entries had been made in the Chemistry class, and sixteen in that on *Materia Medica and Pharmacy*; he thought the prospects of the new session very encouraging.

The prizes, consisting of books, were then distributed to the successful candidates by the chairman, after which the following gentlemen were elected office-bearers for the year:—

President, Mr. W. Scott Brown; Vice-Presidents, Mr. J. T. Slugg, F.R.A.S., Mr. W. Wilkinson; Treasurer, Mr. George S. Woolley; Hon. Secretary, F. Baden Denger, F.C.S. Other members of council: Messrs. Barnaby, Blain, Bostock, Botham,

Hargraves, Hughes, Kay, Mumbray, Payne, Robinson, Hermann, Woolley, and J. Waterhouse.

The meeting concluded with a vote of thanks to the retiring officers.

After the meeting the annual dinner was held at the Blackfriars Hotel. About fifty of the leading members of the trade in Manchester and district were present, and several guests.

The President, Mr. W. Scott Brown, occupied the chair, and the vice-chairs were filled by Mr. J. T. Slugg, F.R.A.S., and Mr. W. Wilkinson—the Vice-Presidents.

After the chairman had proposed the customary loyal toasts, Mr. Blyton, of Liverpool, proposed "The Pharmaceutical Society of Great Britain," which was responded to by the President. The following toasts were also given:—"The Pharmaceutical Conference," by Mr. Woolley, acknowledged by Mr. Benger; "The Manchester Chemists' Association," by Mr. Gibson, responded to by Mr. Wilkinson; "Kindred Local Associations," proposed by Mr. Siebold, and acknowledged by Mr. Scott (Rochdale) and Mr. Blain (Bolton); "The Medical Profession," by Mr. J. T. Slugg; and "Our Guests," by Mr. Hughes, replied to by Mr. J. Plant, F.G.S., Curator of the Peel Park Museum, Mr. O'Neil, F.C.S., and Mr. Watson, D.Sc.

A very agreeable evening was spent, and these annual celebrations bid fair to become increasingly popular and appreciated.

NORTHAMPTON PHARMACEUTICAL ASSOCIATION.

THE above society held its annual meeting on October 4, when a report was presented for the past year, showing a prosperous condition. The expenditure for the year amounted to about 7*l.* 10*s.*, including 4*l.* 9*s.* 3*d.* for books and stationery. A balance of 8*l.* 17*s.* 4*d.* was carried forward. The association numbered twenty-five members, three corresponding members, and seven honorary members. A series of classes for the ensuing session has been organised, to be conducted by certain of the members, thus:—Practical Chemistry, by Mr. W. Hicks; Botany, by Mr. G. C. Druce; *Materia Medica*, by Mr. O. Wallis; Pharmacy, by Mr. Lewis; a Preliminary Class is to be conducted by Mr. Osborne, and a Prescription Class. During the session, also, Mr. Druce will describe volume testing, the use of chemical apparatus, specific gravity, chemical processes, &c.

After the adoption of the report, Mr. O. Wallis, the President, delivered the opening address, and his concise account of the work of this modest, but very useful, association is worth noting by the chemists and assistants of other provincial towns of a size corresponding to Northampton. He said:—

"Since the formation of the association in October, 1871, I find that no fewer than ninety-one members have joined it. Many of those passed their examinations whilst connected with us, and those who have passed since leaving the town can, and I have no doubt do, look back with feelings of pleasure when they think of the evenings spent here, and gratitude for the assistance they gained by attending the various classes, and making good use of the many opportunities afforded by this association for gaining knowledge. We know this is so by the fact that many wish to keep up their connection with us by becoming corresponding members, by their occasionally sending us a paper on some pharmaceutical subject, and by the testimony of others who now greatly miss the advantages which we enjoy. What the association has done in the past it is capable of doing now. I know the Minor examination has been made more difficult, or rather more practical, and I welcome the change; but this must be counterbalanced by our endeavour to make our knowledge more really practical, and by increased perseverance in study. I would especially ask all to study systematically, to write out a table of the various subjects, with a certain evening for the study of each, and endeavour as far as possible to keep to it. I can state from personal experience that this is an excellent plan, and when followed up it is really surprising the amount of work one is capable of performing. The alteration in the conducting of the Minor entails a greater amount of work and increased responsibility upon the class-takers, though I am sure they will perform their part most creditably; but on their behalf allow me to ask you to encourage

November 15, 1875.
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of the Pharmacopoeia
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them in their efforts by your punctual attendance. Up to the present time success has certainly attended the efforts of this association. During each session classes have been held in the subjects embraced in the pharmaceutical curriculum; papers on various subjects of pharmaceutical interest have been read, and followed by profitable discussions; our advantages are also constantly increasing. Our Materia Medica specimens have been much enriched by several substances rare and interesting; our library is now an extensive one, and contains all the text books required by the students, as well as many valuable works of reference; and apparatus for volumetric estimations has also been purchased, so that, although we cannot conceal the fact that the attendance during the past session (as stated in the report) has been below the average, still, we have good reason for indulging the hope that by increased individual exertion on the part of the members the session now commenced will be as successful, or even more so, than any which have preceded it.

James Barry, Esq., J.P., has since presented twenty volumes of the *Pharmaceutical Journal* to the association.

THE WOLVERHAMPTON (AND DISTRICT) ASSOCIATION OF CHEMISTS AND DRUGGISTS.

This society held its opening meeting for the session on the 28th ult. Mr. W. Fleeming, President of the association, in the chair. There was a good attendance.

The Chairman opened the proceedings, and Mr. F. J. Barrett, F.G.S., gave a report of the operations of the association, reading a long list of works which had been presented by authors and others. Classes and lectures for the ensuing session were announced.

Afterwards Mr. W. Y. Brevitt delivered an introductory address to students. He strongly urged the acquirement of business-like, orderly, and cleanly habits in addition to scientific attainments. He urged students in all practical laboratory work to learn and remember the reasons for the various processes, and suggested the more general adoption of a practice on the part of assistants of examining all drugs and chemicals before taking them into stock. He said that most chemists made a practice of testing chemicals and drugs in extensive use, but that it would be well both for themselves and their assistants and apprentices, if they could afford the time, to examine everything bought, and not being, as many of them are, entirely at the mercy of the manufacturer or wholesale houses. The time might come when chemists in one town would combine together and buy original packages of drugs, have them assayed by some chemist in their own employ, reject the impure, and divide the purest and best articles amongst themselves.

He assured the students that their masters wished to prove to them that they regarded them as something more than ordinary trade assistants; they looked upon them as the young men who might in a few years' time, as they gradually sink into the "sere, the yellow leaf" period of life, fill the positions they now hold. They desired them therefore to become worthy successors, and better educated men and more accomplished pharmacists than they themselves were. The association had for its sole object the students' interest and improvement, and its ultimate success or failure rested entirely with them. Would they make use of the advantages and opportunities now offered, or would they thrust aside with apathy and carelessness the friendly endeavours to benefit them? The employers trusted they would throw their whole heart into the association's work, and make it the success it deserved to be. Wolverhampton had been called "the metropolis of the Black Country;" the employers desired, when the young men left them to go forth into the world, that they might become living witnesses of the truth of the borough motto, "Out of darkness cometh light."

The Chairman expressed his concurrence with a suggestion made by Mr. Brevitt in the course of his address, that the chemists and druggists of the town and neighbourhood should unite together in the purchase of bales of drugs from the importers, so that in retailing them out to their customers they would be in a better position to guarantee their genuineness and purity than they were in purchasing them from the large wholesale houses. He hoped that this association might be the means of bringing about so desirable a result.

THE CHEMICAL SOCIETY.

November 4, 1875.

PROFESSOR ABEL, F.R.S., President, in the chair.

The usual business of the Society being completed, the first paper, "On the Decomposition of Stearic Acid by Distillation under Pressure," by Mr. G. Johnston, was read; Dr. C. R. A. Wright then read a paper by himself and Mr. G. H. Beckett "On Isomeric Terpenes and their Derivation," being Part V. of their researches on this subject; also one "On the Alkaloids contained in the Aconites, Part I.," after which Mr. F. J. M. Page gave "An Account of a simple form of Gas Regulator for maintaining a Constant Temperature in Air Baths, Water Baths, Incubators, &c." Communications from Mr. R. W. E. M'Yvor were also read, "On the Fluorides of Arsenic, Phosphorus, and Iodine," and "On the Iodides of Antimony." The last paper, "On Toluylphenyl: a New Hydrocarbon," was by Mr. T. Carnelly. The meeting finally adjourned until Thursday, November 18, when the following communications will be read, "Ethyl Phenyl Acetylene," by T. M. Morgan; "On the Presence of Liquid Carbon Dioxide in Quartz Cavities," by W. N. Hartley; addendum to the paper entitled "Monthly Analytical Examination of the Harrogate Spar, 1872," by R. H. Davis; "On certain Bismuth Compounds," by Mr. M. P. Muir; "On the Formation of Cinnamic and other analogous Acids," by Mr. W. H. Perkin, and other papers.

Marriage.

PATTON—ROBINSON.—Sept. 11, at Holy Trinity Church, Bordesley, Birmingham, by the Rev. Richard W. Enraght, Vicar, George Pattison, of St. John Street Road, London, to Laura Elizabeth, youngest daughter of the late John Robinson, Esq., of Bristol Road, Edgbaston, Birmingham. Colonial papers please copy.

Obituary.

ANDERSON.—Sept. 29, Mr. Charles Anderson, pharmaceutical chemist, of Lower Belgrave Street, S.W. Aged 61 years.

BANKS.—Sept. 27, Mr. Morris Banks, jun., chemist and druggist, of Birmingham. Aged 39 years.

BRADLEY.—Sept. 23, at his residence, Kilburn, Mr. John Bradley, for many years a member of the firm of Bradley & Bourdais. Aged 65 years.

COOPER.—Oct. 4, Mr. William Whirkledge Cooper, chemist and druggist, of Stoke Newington. Aged 35 years.

DUNCAN.—Oct. 18, Mr. John Duncan, chemist and druggist, of Brecon. Aged 65 years.

FOSTER.—Oct. 16, Mr. Thomas Foster, chemist and druggist, of Evesham, Worcestershires, Aged 69 years.

GORDON.—Oct. 21, Mr. John Thomas Gordon, chemist and druggist of Sittingbourne, Kent. Aged 21 years.

GREEN.—Nov. 6, Mr. Joseph Coghlan Green, chemist and druggist, of Northampton. Aged 65 years.

JEVNES.—Oct. 21, Mr. George William Jevnes, pharmaceutical chemist, of Princess Street, W. Aged 54 years.

JONES.—Oct. 15, Mr. John Jones, chemist and druggist, of Worksop. Aged 72 years.

KILLETT.—Oct. 17, Mr. John Killett, chemist and druggist, of Hulme, Manchester. Aged 43 years.

KNIGHT.—Oct. 6, Mr. James Knight, pharmaceutical chemist, of New Park Road, Brixton Hill. Aged 71 years.

MIDDLETON.—Oct. 2, Mr. William Henry Middleton, chemist and druggist, of Bradford, Yorkshire. Aged 41 years.

TRENFIELD.—Oct. 26, Mr. William Trenfield, chemist and druggist, of Gloucester.

VOSE.—Oct. 1, Mr. Thomas Vose, pharmaceutical chemist, of Liverpool. Aged 57 years.

WAUGH.—Oct. 26, Mr. Alexander Waugh, chemist, Regent Street, London. Aged 39 years.

WILKINSON.—Oct. 17, Mr. Joshua Hardisty Wilkinson, chemist and druggist, of Scarborough. Aged 31 years.

WINE.—Oct. 2, Mr. John Wine, pharmaceutical chemist. Aged 87 years.



For particulars of Advertisements, Subscriptions, &c., please refer to the first page of Literary matter. An Index to the Advertisements contained in this issue will be found in the front portion of the Journal.

OFFICE—Colonial Buildings, 44a Cannon Street, London.

RENDALL'S THEOBROMINE, OR CONCENTRATED COCOA,

BEING a first-class article, and nicely got up, commands a good sale by all Chemists who bring it under the notice of their customers.

In 1s., 2s., 3s., 9d., and 7s. 6d. tins, through the Wholesale Houses, or direct from the Proprietor.

J. M. RENDALL,
28 QUEEN STREET, EXETER.

Chief Wholesale Agents—

SANGER & SONS, 150 OXFORD STREET, W.

"LEA & PERRINS" SAUCE, THE "WORCESTERSHIRE."

In consequence of Spurious Imitations of LEA & PERRINS' SAUCE, which are calculated to deceive the Public, LEA & PERRINS have adopted a NEW LABEL, bearing their Signature, thus—



Lea & Perrins



Which will be placed on every bottle of WORCESTERSHIRE SAUCE after this date, and without which none is genuine. Sold Wholesale by the Proprietors, Worcester, Crosse & Blackwell, London, and Export Oilmen generally. Retail, by dealers in Sauces throughout the World.

November, 1874.

POROUS BATTERY CELLS OF SUPERIOR QUALITY. PATENT PLUMBAGO CRUCIBLE COMPANY,

Sole Makers of *Morgan's Patent Crucibles*,
BATTERSEA WORKS, LONDON, S.W.

DOMESTIC FILTRATION.

"WITH regard to the Silicated Carbon Filters, I have made many experiments upon them, and have been astonished at the energy and rapidity of their action. I passed through a small Filter of this make some of the worst description of water supplied by the London Water Companies, and found it, after filtration, to have become as pure as the very best London water. My experiments show that the Filter exercises a decomposing action—a chemical action—on the Organic impurities in Drinking Water. I have no doubt that water, which is dangerous from the Organic Matter contained in it, becomes safe on passing through the Silicated Carbon Filter. A point of some importance, shown by my experiments, is that a Second Filtration still further improves the quality of Drinking Water. After being in use for a considerable period, Filters lose their power and require renovation. I have found that the passage of a little Hot Water through the Silicated Carbon Filter, and afterwards blowing a little air through it, restores its power."

J. ALFRED WANKLYN, M.R.C.S., London,
Formerly Professor of Chemistry in the London Institution;
Joint Author of a Book on Water Analysis, and of the
Ammonia Process.



IMPORTED BY HOOPER AND COMPANY, 7 PALL MALL EAST, LONDON.

NOW READY, FOURTH ISSUE.

W. BUTCHER'S WHOLESALE CATALOGUE OF HOMOEOPATHIC MEDICINES,

Mother Tinctures, Medicine Chests and Cases, Sugar of Milk, Glass and Cardboard Goods, and every Sundry connected with the Homoeopathic Business.

Sent post free to any part of the World on application.

HOMOEOPATHIC MEDICINES SUPPLIED IN BULK, OR READY FOR SALE.

W. BUTCHER,

Manufacturing and Export Homoeopathic Chemist,
BLACKHEATH, LONDON, S.E.

REDUCTION IN PRICES.

GENERAL MINERAL WATERS DEPÔT,
27 MARGARET STREET, REGENT STREET,
LONDON.



DIARY FOR 1876.

We are mailing copies of THE CHEMISTS' AND DRUGGISTS' DIARY to our foreign subscribers as fast as we can get them bound; and we hope to complete this section of our work in reference to that publication by to-morrow, the 16th inst. We shall then immediately commence to address copies to our British subscribers. Within a few days every actual subscriber on our books should receive a copy, and we hope it will give satisfaction.

The edition for 1876 comprises diary pages on superior paper, ruled, and other skeleton pages useful for pharmaceutical and commercial memoranda, all interleaved with blotting paper; a summary of the laws affecting chemists and druggists, including Excise Regulations, "Sale of Food and Drugs Act" (in full), "Pharmacy Acts of Great Britain and Ireland" (in full), and many others in full or in abstract; together with a great variety of information, tables, formulae, &c., all calculated to be of special advantage to the chemist and druggist in his daily occupations.

Subscribers requiring extra copies of this work can have them for 2s. 6d. each. To non-subscribers we charge 3s.

Nor long ago an enemy
agrees to those working
in such a very mild sea
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Medicine, we can

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THE CHURCH AND THE SHOP.

Nor long ago an enterprising purveyor of packet teas offered agencies to Methodist ministers throughout the country, suggesting to those worthy gentlemen that there could be no harm in such a very mild service of Mammon as this, and hinting that they might quite easily propagate the Gospel and his precious Congous at one and the same time. We never knew the subsequent history of that "little plant," but, to the credit of Methodism, we can say that we have never yet heard of one of Mr. Wesley's successors with a "license to deal in tea" painted up over his parsonage. However this may be, the gentlemen who form the only genuine Catholic apostolic and infallible concern over the water have no delicacy that way. Under the title "Epicurie and Pharmacie Bénites," the Paris *Charivari* indulges in a little scoffing *à propos* of a new speculation, which we reproduce below as well as our language will permit:—

Eating brings an appetite.

The success which pious liqueurs have made was calculated to induce the revered fathers to proceed further in the commercial line.

This is what has come to pass.

Among the advertisements in the *Univers* there may be observed at this moment a new product, half pharmacy, half grocery.

The advertisement is accompanied with a cross, as if to invite the devout to prostrate themselves before this providential farina.

It runs thus:—To persons with delicate stomachs, children or adults, in cases of weakness, phthisis, chronic bronchitis, dyspepsia, &c. The Restorative Farina of Health of the Trappist Fathers is prepared at the Abbey of Port-du-Salut (Mayenne).

Poor Revalenta! What a proof of clerical ingratitude!

It was once said—there was even a certificate to that effect—that thou hadst cured the Holy Father himself!

Who would have thought it?

But it is perfectly simple.

Liqueurs have answered so well that the world may expect to be inundated with all sorts of holy necessities.

We may look for—The Scapular Flannel Waistcoat, with indulgences; the Miraculous Aërated Water which stimulates the liver and ensures Paradise; Rigolot's Sanctified Paper, with litanies printed on it; and so forth.

Truly it is well to know how to combine so well celestial interests with interest at 30 per cent.

PHARMACEUTICAL CHEMIST (G.B.)
AND PHARMACEUTICAL CHEMIST (I.).

THE regulations for the examination qualifying a candidate for registration as a pharmaceutical chemist in Ireland have been settled by the Educational Committee of the Irish Pharmaceutical Council. This at least is what we understand to be the case from the unofficial reports which have reached us. If our information is correct, and we have no reason to doubt it, it only remains to be said that the worst fears of those who suggested the possibility of a debasement of the title "Pharmaceutical Chemist" are realised, and the confiding amiability of our eminent councillors who thought it unworthy of certain suspicious members to imagine that the Irish Council might place their standard for the title lower than ours is far from being justified. Omitting the regulations referring to Latin, English, and arithmetic, which in the Irish scheme are expressed more mildly than they are in the requirements for our Preliminary, we present below a parallel view of the examinations for an

Irish Pharmaceutical Chemist and British Chemist and Druggist respectively:—

IRISH EXAMINATION FOR THE
TITLE "PHARMACEUTICAL CHEMIST."

Botany.—To recognise the principal indigenous plants used in medicine, and to give the definitions and the distinctive characters of their several parts.

Materia Medica.—To recognise specimens of the drugs in the Pharmacopœia, to describe their characters, the sources from which they are obtained, and the official preparations into which they enter. To detect adulterations, and give the active principles and average doses of such as are poisonous.

Pharmaceutical and General Chemistry.—The Elementary Laws of Chemistry. The chemical preparations of the Pharmacopœia, their characters and tests.

Practical Pharmacy.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly; and to explain the processes of making the non-chemical preparations of the Pharmacopœia.

BRITISH EXAMINATION FOR THE
TITLE "CHEMIST AND DRUGGIST."

Botany.—To recognise the more important indigenous plants used in medicine. To possess a general knowledge of the elementary structure of plants, and the structure and distinctive characters of roots, stems, leaves, and their parts. To name and describe the various parts of the flower.

Materia Medica.—To recognise specimens of roots, barks, leaves, fruits, resins, gums, animal substances, &c., used in medicine; give the botanical and zoological names of the plants, &c., yielding them, and the natural families to which they belong; name the countries and sources from which they are obtained, the official preparations into which they enter, and judge the quality and freedom from adulteration or otherwise of the specimens.

Chemistry.—To recognise the ordinary chemicals used in medicine. To possess a *practical* knowledge of the processes by which they are produced, the composition of such as are compound, and explain the decompositions that occur in their production and admixture, by equation or diagrams. To determine practically, by means of tests, the presence in solution of the chemicals in common use, and explain the reactions which occur in each case. To possess a general knowledge of the laws of chemical philosophy; and a *practical* knowledge of the means of determining specific gravities, densities, and temperature, and of the instruments appertaining thereto, and the physical and chemical constitution of the atmosphere.

Prescriptions.—The candidate is required to read without abbreviation autograph prescriptions; translate them into English; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of Posology; also to render in good Latin ordinary prescriptions written in English.

Practical Dispensing.—To weigh, measure and compound medicines; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package.

Pharmacy.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, and have well marked physical characters, such as extracts, tinctures, powders, &c.; to give the proportions of the active ingredients, and possess a *practical* knowledge of the processes and the principles of the processes, by which they are made, and of the best expédients and methods of manipulation for forming Emulsions, Pills, &c.

Thus it is quite evident, if the programmes given above mean anything at all, that the examination for Pharmaceutical

Chemist in Ireland will be less severe than that for Chemist and Druggist in Great Britain; and when we remember that an English candidate is required to pass another and a still more severe examination before he can take up the higher title here we think it is obvious that the Irish Council has not kept the faith with the English Society which was so freely professed and promised.

SIR M. H. BEACH AND THE IRISH PHARMACY ACT.

THE development of Irish pharmacy still continues to present new and startling situations. We have seen the small and comparatively unimportant body of druggists there overthrow an old and rooted corporation in a few months, carrying through Parliament at the first attempt a measure which interfered with no small vested interests. Then we saw a Tory Government, vacillating on most subjects, but resolute for once, determine in spite of all opposition to establish "home rule" in at least one section of Irish affairs. And now we have before us the most surprising novelty of all, in the spectacle of a council of Irish gentlemen illegally interfered with by a minister of the Crown, and tamely submitting to the impertinence and obeying the behests of his mightiness.

This is what has occurred during the past month. A debate was fixed for November 3 to settle the question whether there should be one or two grades of registered pharmacutists in Ireland. We presented the two sides of the argument in our last issue. It is sufficient here to say that a vote for one grade was anticipated from the apothecaries, for two grades from the druggists, and a perfectly disinterested decision from the medical and scientific representatives on the council. What is more important, however, to note is that this was a question which in the Act itself was expressly left for the decision of the council. At an interim meeting a letter was read from the Chief Secretary, Sir Michael Hicks-Beach, the nominal author of the Act, expressing himself as decidedly unfavourable to the creation of a grade of chemists and druggists under the authority of the Irish Act, and stating as his reason that the intention of the Act was to establish, ultimately, reciprocity with the English society. The Chief Secretary might at least have abstained from publishing his reasons. If he had condescended to acquaint himself with the matter on which he wrote, he would have found that the limitation of Irish pharmacists to one grade is exactly the best way of *preventing* reciprocity with the English society, because a standard which shall not be too high to meet the pharmaceutical requirements of Ireland will be too low to rank on the same level with the Major examination of the British Pharmaceutical Society. But that only affects the Chief Secretary's reasoning, which is perhaps beyond his own control. We are more particularly concerned with his action, which certainly ought to be checked. The Irish Pharmacy Act, like Duncan on Macbeth, had double claims on Sir Michael Hicks-Beach, which should have held him back from the attempt to mutilate its provisions. First, as its author and its subject, "strong both against the deed;" then, as the special representative of Irish laws in Parliament, he "should against the murderer shut the door, not bear the knife" himself. What, let us ask, would have been said of Mr. Gladstone if, after passing the Act for disestablishing the Irish Church, and giving the disestablished corporation the right of arranging its own rubric, he had afterwards interfered by dictating his own preferences? This is precisely analogous to what Sir M. H. Beach has thought fit to do, and we believe that we use words which define his conduct specifically and grammatically when we describe his interference as unconstitutional and impertinent.

THE GREENOCK CITRATE OF MAGNESIA CASE.

WHY as we are of recording the meddling and muddling policy which public analysts have made so peculiarly their own since the Act of 1872 first came into operation, it is necessary to take one final glance at the blotted page we are turn over to what we hope may prove a cleaner and more creditable leaf. The Greenock citrate of magnesia case was, we believe, the last one tried under the old Act, and it forms a fitting conclusion to the chapter. We wrote last month of the "harassing and blundering" which has been carried on by the public analysts with as much patience and perseverance as if they were fulfilling a sacred duty; and like Sheridan's famous interrupter when he asked—"Where shall we find a man so lost to all the instincts of reason?"—Mr. McCowan, public analyst for Greenock, responds "Here, here."

There are several features in this case which are worth referring to. First of all, it was instituted just before the expiration of the old Act, and in face of the evident desire on the part of the legislature to prosecute only real fraud. Secondly, it was stated by the analyst in cross-examination that the prosecution had not applied to any other chemist in Greenock, because they believed they could not get the pure article from any of them. How did this accord with his subsequent statement that he was not aware that citrate of magnesia was the name given to a well known article of medicine compounded in the same way as the sample analysed by him? Why, too, if it was expected that the "adulterated" article was the only one kept, was not one of the larger establishments of Greenock selected for prosecution? Surely, if the only desire was to benefit, or rather to protect, the public, or even to get a fair legal decision, it would have been a better plan to have chosen for attack one of the larger and richer houses of the town. It would have been more chivalrous, at any rate. The pretence that true citrate of magnesia was an article of commerce, and the overthrow of that profession by the defenders, was one of the most damaging points of the trial for the prosecution. On being pressed in regard to his statement Mr. McCowan was forced to admit that he had applied to some of the chief establishments in Glasgow for true citrate of magnesia, but without success, and had ultimately procured a compound under that name from a dealer in philosophical instruments and scientific chemicals! He produced some of this substance in court, and as his opponents had no opportunity of examining it they were not in a position to upset Mr. McCowan's evidence so completely as they could do now. A sample of the precious article, sold at 1s. per ounce, lies before us as we write. Having been a few days in paper it is now a pasty cake; but while it was in a dry state nothing could be more evident than that the stuff was a mere mixture of citric acid with carbonate of magnesia. Of course this is no proof in favour of the other compound, but it is an indication of the spirit animating the prosecution, and it shows how resolved they were to secure a conviction if possible.

The evidence of the two Greenock doctors was very convincing and was given generously, but at the same time with undoubted justice. They said that when they prescribed "citrate of magnesia" they meant precisely that article which Mr. McCowan described as "a vile compound," and which was then the *casus belli*. They said further that they would consider a chemist wrong who should dispense a true citrate of magnesia if they ordered the article without specially indicating that they wanted the absolutely pure chemical. And if need were the evidence of twenty million purchasers to the same effect could be added to this. Mr. McCowan, of Greenock, though occupying a position which requires considerable discretion, acquaintance with trade, and technical knowledge, swears that he was not aware

November 14, 1876.]
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A great deal of credit is due to Mr. MacNaught, of Greenock, for his energy in organising a thorough defence to this unwarrantable action, and thereby obtaining a reversal of the judgment pronounced in a similar case by a London magistrate who had only the evidence of the prosecutors to guide him. The trade generally, too, as well as the Greenock chemists in particular, ought to be very grateful to the Glasgow gentlemen who rendered them such valuable support and secured the debatable ground free, we hope, from further vexatious molestation.

THE MODEL LABORATORY.

A good share of influential outside support has been given to the suggestion made by Mr. Schacht to establish a model pharmaceutical laboratory at Bloomsbury Square. The President of the Pharmaceutical Conference advocated the idea warmly, and since its rejection letters have appeared from Messrs. Charles Symes, Alfred E. Tanner, Barnard Proctor, A. W. Gerrard, and Thomas Haffenden, all deploring the decision arrived at by the Council. The scheme has a taking look about it on paper, but we can hardly be surprised at the reluctance of the Council to carry it into execution. What was first suggested by Mr. Schacht and supported by Mr. Groves was generally understood to be a pharmaceutical laboratory in full working order, adapted expressly for teaching students, and open for examination to members of the society. If such a laboratory were established in a style commensurate with the position of the society, it must necessarily be somewhat complete and extensive. And inasmuch as a laboratory of that kind is not self-acting, the services of one or more competent managers would be required. The society is not rich enough to carry on such a costly luxury, and to turn the concern into a commercial speculation was out of the question, so that, however good it may be, the laboratory pictured by Mr. Groves and imagined by Mr. Symes and Mr. Gerrard, is no more accessible to pharmacutists than is the moon to their babies. Half a loaf, however, is better than no bread, so it was afterwards urged that if the scheme could not be executed in its entirety, something might be done by means of a collection of apparatus, with perhaps an occasional feeding time of actual work, for the benefit of students and country druggists. As regards the former, Mr. Hills states that practical pharmacy is quite sufficiently taught in the ordinary curriculum of the lectures. This we cannot doubt. The Pharmaceutical Council would hardly have the coolness to announce a course of lectures on pharmacy and then send away its customers unacquainted with the very tools necessary to the art. Mr. Schacht, too, on the second occasion, avoids recommending his proposal as for the benefit of students, and urges it exclusively for the sake of chemists about to start a laboratory. Mr. Barnard Proctor, following on the same side, thinks he could learn a great deal by walking "through a collection of apparatus requisite for the performance of the pharmacopoeial processes." The proposal, brought down to these dimensions, is hardly serious. There is plenty of opportunity of seeing a collection of apparatus without requiring the Pharmaceutical Society to take another house for the purpose. We are quite sure such firms as Jackson's, of Barbican, Griffin's, of Garrick Street, or Townson's, of Bishopsgate, would be most happy to exhibit to any chemist and druggist with a view to business

quite as fine a variety of apparatus as the society would be likely to get together. An international competition and exhibition of apparatus would be a most interesting display, we admit; and we hope it may some day come to pass. It would have occurred if the series of technical exhibitions at Kensington had not come to an untimely end. But a mere half-shopful of glass and porcelain ware, such as would be possible on the present premises, would serve no useful purpose, and would only excite the ridicule of critics. A Frenchman once defined a crab as "a red fish which walks backwards." Currier said that was an excellent definition, except that a crab was not a fish, was not red, and did not walk backwards. So to some extent we may say of this agitation for a model laboratory. It is a good notion, but with a few drawbacks. In the first place, it is not much wanted; secondly, there is not room to establish such a laboratory at Bloomsbury Square; and, thirdly, it would be of extremely small use if it were established.

LECTURE PROGRAMME OF THE SOCIETY OF ARTS.

THE Society of Arts will commence its 122nd session on the 17th inst., when an opening address will be delivered by Lord Alfred S. Churchill, Chairman of the Council. The following lectures are announced for the ordinary (Wednesday evening) meetings:—

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Second course by W. Mattieu Williams, Esq., "On Steel Manufacture."

Third course by George Jarman, Esq., "On Wool Dyeing."

Besides these, the African and Indian sections, and also the chemical section, will hold meetings of their own; a series of juvenile lectures will be delivered during the Christmas vacation, and finally Dr. Richardson will deliver a course of special lectures on Friday evenings in December, January, and February, "On Unhealthy Trades," being reports of special inquiries.

DISGRACEFUL CONDUCT.

A CHEMIST'S assistant, named Frederick Ellis—a disreputable specimen—made himself particularly conspicuous in Wrexham last month, by taking a leading part in an elopement accomplished from that town. This small Don Juan had been living as assistant with Mr. J. F. Edisbury, of Wrexham, and, during his residence there, had become acquainted with a German photographer, named Louis Fuidge, whose place of business was next door to Mr. Edisbury's. Ellis left his situation recently, and Fuidge invited him to stay with him until he obtained another place. Ellis accepted the invitation, and the result of his stay in that house was that Mrs. Fuidge and he

under whose auspices it is published, should choose the title of "Elementary Science" it is difficult to say: botany, at all events, has little claim to the appellation.

The Professor is so well known as a successful lecturer and writer that to criticise his work would be out of place. He has proved entirely equal to his reputation. We hope that this simple introduction will find its way into many homes and many schools, and it will disappoint no one of its readers. Though small, it will give a thoroughly well-grounded knowledge of its subject—a description of the organs of plants. It aims at nothing more, and it perfectly fulfils its object. There are numerous illustrations, and questions for examination are appended. The reason why this alluring branch of study has been comparatively neglected is that in former days there were but two kinds of manuals—on the one hand the ponderous treatises which considered us as grown-up men; on the other, the sweetly pretty moral essay, filled with much piety, more scraps of poetry, and very little science. Later on in life, finding that botany was neither singing hymns nor writing verses, we were content with an occasional utterance respecting its delightful character, and so the matter ended. Now our true men of science talk wisely, carefully, and clearly about scientific things, and feel a pleasure, when the time comes, in using their large experience for the benefit of the youngest student. Professor Bentley is to be congratulated on the manner in which he has contrived to teach and explain his subject.

An Easy Introduction to Chemistry. Edited by the Rev. Arthur Rigg, M.A., and Walter I. Golden, B.A. London, Oxford, and Cambridge: Rivingtons. 1875.

THE authors of this elementary work have between them produced a good book more of an explanatory than of an experimental character. It is intended for learners who may be anxious to understand the first principles of chemistry, and seems also meant as an introductory treatise which parents might profitably read, and if need be, demonstrate to their children. In both respects it is a decided improvement on the previous edition, and it exhibits a clearness and simplicity of style much to be commended. Nothing is more difficult than to convey a knowledge of the facts of chemistry or an explanation of its phenomena to the youthful mind, or indeed, for the first time, to anyone. The whole subject is so utterly strange, and the terms employed demand such careful definition. To a great extent this difficulty has been surmounted in these pages, the only failure being when too wide a generalisation has been attempted.

While we admire, then, many of the opening chapters, we imagine that the later ones, and especially the concluding short treatise on "The Chemistry of Life," will prove beyond the comprehension of the readers to whom the volume is addressed.

The plan adopted in the manual has been already made familiar in this journal: separate chapters are devoted to the more important subjects, as hydrogen, oxygen, nitrogen, and carbon, and the air; others are properly grouped together, the metals and their oxides are well described, while the theory of combustion, the nature of flame, and the application of the blow-pipe, are rendered both interesting and intelligible.

The distinctive character of the book is the constant allusion to topics of daily interest, the introduction of which is likely to awaken the attention of the student. Such, for instance, is the anecdote of Mr. Gurney, who extinguished a fire in a coal mine in Scotland by simply preparing a quantity of carbonic anhydride, which, sinking down to the source of the calamity, immediately put out the flames; and we are not sorry to see reproduced the old story of the Grotto del Cone, which the late Professor Daniell never omitted to relate. Equally instructive is the iron chapter, including the Bessemer and Heaton's process, or the following paragraph on phosphorus, which may serve as a quotation:—

"Sir Benjamin Brodie discovered that if phosphorus is heated in an atmosphere containing no oxygen, and a very small piece of iodine dropped upon it, the whole mass undergoes a remarkable change. The phosphorus then no longer looks yellow and waxy, but is red and powdery; it no longer fumes in air, and may be heated to a very considerable temperature (500° Fahr.) before it is oxidised or burnt, but if very slightly rubbed with chlorate of potassium it detonates. The grit of the match-box is therefore mixed with red phosphorus, and the match-head tipped with a composition containing chlorate of potassium, so that the match, if rubbed on the box, readily takes fire; but as

it contains no phosphorus itself, it does not ignite if rubbed against an ordinary rough surface."

Good also is the note about the incombustible nature of gold. At the great fire in Chicago results were published of the various degrees of damage done to ledgers and business books which were locked up in iron safes. Some of the papers considered best and strongest suffered most, but all the books with gilt edges were, when opened, in a comparatively perfect state. The question thus arises whether gilding might not cease to be restricted to the drawing-room, and might not prove advantageous in the more prosaic region of the counting-house.

In any future edition there are some blemishes which might easily be made to disappear. The temporary hardness of water and the process for its removal is given twice; once at p. 85 as Dr. Clark, and again at p. 118 as Clarke; so, also, not only the fact that carbonic anhydride, although containing oxygen, extinguishes a flame, but the explanation of the phenomenon is printed at pp. 30, 59. Vermilion (p. xiii.) should be correctly supplied as at p. 106; and the tyro should be warned against the common error involved in the misprint on p. 89, where it is stated that "the jar is filled with spirits of wine," and that gradually the water will enter the jar and cause the spirits to rise in the tube. The paragraph on sulphur might be expanded with advantage, if only to meet the requirements of the South Kensington authorities.

These defects are but minor, and we may honestly commend the publication, both for the accuracy of its teaching, and the very readable mode in which its instructions are conveyed.

The Veterinary Vade Mecum: a Manual on the Horse, Cow, Dog, and Sheep; their Diseases, Homoeopathic Treatment, and General Management. Edited by R. P. G. Lord, M.R.C.V.S.L.; also by J. Rush and W. Rush, Veterinary Surgeons. London: The Homoeopathic Publishing Company.

ANNOX on the plan followed in this work would meet an almost universal welcome from chemists and druggists, who very much want just such a treatise, if it only followed the old, orthodox method of treatment. The authors know their business thoroughly. They treat the various diseases concisely, but completely. We know of no book where we could turn so readily for an exact statement of the symptoms in the several animals which indicate the complaint; and as far as hygienic treatment is concerned we admit also the usefulness of this volume. But it is difficult to persuade those of us who have dealt in "harm and cattle medicines," that anything but heroic treatment will answer in their disorders. The application of homoeopathy to veterinary treatment strikes many of us as a sort of *reductio ad absurdum*. Of course this is prejudice; well or ill founded is quite another question. The authors here seem perfectly confident, and they prescribe their five or ten drops of 1x dilution quite seriously. We fear, too, that if practitioners could get beyond their prejudices it would be difficult to persuade owners of horses and cattle that doses of this sort were medicine at all. What the animals themselves would think we cannot say. It is said that no animal but man ever laughs, so homoeopaths might depend at least on a grave hearing. But our authors are convinced "that if the animals could give more distinct expression to their feelings they would urgently request a change from the heroic treatment to which they have so long been subject to the adoption of milder measures. Mr. Rarey has shown that vicious horses may be tamed without the whip and the spur; we are of opinion that their virulent diseases may be mastered without the strong medical and surgical measures which have been generally employed." Any one willing to test homoeopathy on "our poor relations" will find this work an excellent guide.

The Nature of Light, with a General Account of Physical Optics. By Dr. Eugene Lommel, Professor of Physics in the University of Erlangen. 188 illustrations and Plate of Spectra Chromolithograph. London: Henry S. King & Co. 1875.

THIS is one of the International Scientific Series, and follows in the wake of various English, American, and German authors. The object of the work is to explain to the general, educated public the nature of light, based upon the present state of science. The subject presents itself under a two-fold aspect, the first embracing the investigation of the laws of light, and the second the phenomena of vision or physiological optics.

To the elucidation of the first, optics physically considered, this treatise by the Professor of Physics at Erlangen is devoted.

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Besides these, the African and Indian sections, and also the chemical section, will hold meetings of their own; a series of juvenile lectures will be delivered during the Christmas vacation, and finally Dr. Richardson will deliver a course of special lectures on Friday evenings in December, January, and February, "On Unhealthy Trades," being reports of special inquiries.

DISGRACEFUL CONDUCT.

A CHEMIST'S assistant, named Frederick Ellis—a disreputable specimen—made himself particularly conspicuous in Wrexham last month, by taking a leading part in an elopement accomplished from that town. This small Don Juan had been living as assistant with Mr. J. F. Edisbury, of Wrexham, and, during his residence there, had become acquainted with a German photographer, named Louis Fuidge, whose place of business was next door to Mr. Edisbury's. Ellis left his situation recently, and Fuidge invited him to stay with him until he obtained another place. Ellis accepted the invitation, and the result of his stay in that house was that Mrs. Fuidge and he

under whose auspices it is published, should choose the title of "Elementary Science" it is difficult to say: botany, at all events, has little claim to the appellation.

The Professor is so well known as a successful lecturer and writer that to criticise his work would be out of place. He has proved entirely equal to his reputation. We hope that this simple introduction will find its way into many homes and many schools, and it will disappoint no one of its readers. Though small, it will give a thoroughly well-grounded knowledge of its subject—a description of the organs of plants. It aims at nothing more, and it perfectly fulfils its object. There are numerous illustrations, and questions for examination are appended. The reason why this alluring branch of study has been comparatively neglected is that in former days there were but two kinds of manuals—on the one hand the ponderous treatise which considered us as grown-up men; on the other, the sweetly pretty moral essay, filled with much piety, more scraps of poetry, and very little science. Later on in life, finding that botany was neither singing hymns nor writing verses, we were content with an occasional utterance respecting its delightful character, and so the matter ended. Now our true men of science talk wisely, carefully, and clearly about scientific things, and feel a pleasure, when the time comes, in using their large experience for the benefit of the youngest student. Professor Bentley is to be congratulated on the manner in which he has contrived to teach and explain his subject.

An Easy Introduction to Chemistry. Edited by the Rev. Arthur Rigg, M.A., and Walter I. Gooden, B.A. London, Oxford, and Cambridge: Rivingtons. 1875.

The authors of this elementary work have between them produced a good book more of an explanatory than of an experimental character. It is intended for learners who may be anxious to understand the first principles of chemistry, and also meant as an introductory treatise which parents might profitably read, and if need be, demonstrate to their children. In both respects it is a decided improvement on the previous edition, and it exhibits a clearness and simplicity of style much to be commended. Nothing is more difficult than to convey a knowledge of the facts of chemistry or an explanation of its phenomena to the youthful mind, or indeed, for the first time, to anyone. The whole subject is so utterly strange, and the terms employed demand such careful explanation. To a great extent this difficulty has been surmounted in these pages, the only failure being when too wide a generalisation has been attempted.

While we admire, then, many of the opening chapters, we imagine that the later ones, and especially the concluding short treatise on "The Chemistry of Life," will prove beyond the comprehension of the readers to whom the volume is addressed.

The plan adopted in the manual has been already made familiar in this journal: separate chapters are devoted to the more important subjects, as hydrogen, oxygen, nitrogen, carbon, and the air; others are properly grouped together, the metals and their oxides are well described, while the theory of combustion, the nature of flame, and the application of the blow-pipe, are rendered both interesting and intelligible.

The distinctive character of the book is the constant allusion to topics of daily interest, the introduction of which is likely to awaken the attention of the student. Such, for instance, is the anecdote of Mr. Gurney, who extinguished a fire in a coal mine in Scotland by simply preparing a quantity of carbonic anhydride, which, sinking down to the source of the calamity, immediately put out the flames; and we are not sorry to see reproduced the old story of the Grotto del Cane, which the late Professor Daniell never omitted to relate. Equally instructive is the iron chapter, including the Bessemer and Heaton's process, or the following paragraph on phosphorus, which may serve as a quotation:—

"Sir Benjamin Brodie discovered that if phosphorus is heated in an atmosphere containing no oxygen, and a very small piece of iodine dropped upon it, the whole mass undergoes a remarkable change. The phosphorus then no longer looks yellow and waxy, but is red and powdery; it no longer fumes in air, and may be heated to a very considerable temperature (500° Fahr.) before it is oxidised or burnt, but if very slightly rubbed with chlorate of potassium it detonates. The grit of the match-box is therefore mixed with red phosphorus, and the match-head tipped with a composition containing chlorate of potassium, so that the match, if rubbed on the box, readily takes fire; but as

it contains no phosphorus itself, it does not ignite if rubbed against an ordinary rough surface."

Good also is the note about the incombustible nature of gold. At the great fire in Chicago results were published of the various degrees of damage done to ledgers and business books which were locked up in iron safes. Some of the papers considered best and strongest suffered most, but all the books with gilt edges were, when opened, in a comparatively perfect state. The question thus arises whether gilding might not cease to be restricted to the drawing-room, and might not prove advantageous in the more prosaic region of the counting-house.

In any future edition there are some blemishes which might easily be made to disappear. The temporary hardness of water and the process for its removal is given twice; once at p. 85 of Dr. Clark, and again at p. 118 as Clarke; so, also, not only the fact that carbonic anhydride, although containing oxygen, extinguishes a flame, but the explanation of the phenomenon is supplied at pp. 30, 59. Vermilion (p. xiii.) should be correctly printed as at p. 106; and the tyro should be warned against the common error involved in the misprint on p. 89, where it is stated that "the jar is filled with spirits of wine," and that gradually the water will enter the jar and cause the spirits to rise in the tube. The paragraph on sulphur might be expanded with advantage, if only to meet the requirements of the South Kensington authorities.

These defects are but minor, and we may honestly commend the publication, both for the accuracy of its teaching, and the very readable mode in which its instructions are conveyed.

The Veterinary Vade Mecum: a Manual on the Horse, Cow, Dog, and Sheep; their Diseases, Homoeopathic Treatment, and General Management. Edited by R. P. G. Lord, M.R.C.V.S.L.; also by J. Rush and W. Rush, Veterinary Surgeons. London: The Homoeopathic Publishing Company.

A work of the plan followed in this work would meet an almost universal welcome from chemists and druggists, who very much want just such a treatise, if it only followed the old, orthodox method of treatment. The authors know their business thoroughly. They treat the various diseases concisely, but completely. We know of no book where we could turn so readily for an exact statement of the symptoms in the several animals which indicate the complaint; and as far as hygienic treatment is concerned we admit also the usefulness of this volume. But it is difficult to persuade those of us who have dealt in "herbs and cattle medicines," that anything but heroic treatment will answer in their disorders. The application of homoeopathy to veterinary treatment strikes many of us as a sort of *reductio ad absurdum*. Of course this is prejudice; well or ill founded is quite another question. The authors here seem perfectly confident, and they prescribe their five or ten drops of 1x dilution quite seriously. We fear, too, that if practitioners could get beyond their prejudices it would be difficult to persuade owners of horses and cattle that doses of this sort were medicine at all. What the animals themselves would think we cannot say. It is said that no animal but man ever laughs, so homoeopaths might depend at least on a grave hearing. But our authors are convinced "that if the animals could give more distinct expression to their feelings they would urgently request a change from the heroic treatment to which they have so long been subject to the adoption of milder measures. Mr. Rarey has shown that vicious horses may be tamed without the whip and the spur; we are of opinion that their virulent diseases may be mastered without the strong medical and surgical measures which have been generally employed." Any one willing to test homoeopathy on "our poor relations" will find this work an excellent guide.

The Nature of Light, with a General Account of Physical Optics. By Dr. Eugene Lommel, Professor of Physics in the University of Erlangen. 188 Illustrations and Plate of Spectra Chromolithograph. London: Henry S. King & Co. 1875.

This is one of the International Scientific Series, and follows in the wake of various English, American, and German authors. The object of the work is to explain to the general, educated public the nature of light, based upon the present state of science. The subject presents itself under a two-fold aspect, the first embracing the investigation of the laws of light, and the second the phenomena of vision or physiological optics.

To the elucidation of the first, optics physically considered, this treatise by the Professor of Physics at Erlangen is devoted.

The opening chapters are occupied exclusively by an explanation of fundamental laws, such as reflection, refraction, dispersion of colour, achromatism, spectrum analysis, and absorption, together with an accurate description of fluorescence and phosphorescence. Occasion is taken on the way to give a fair notion of mechanical appliances, as lenses, spherical mirrors, and some optical instruments, amongst which may be noted microscopes, the telescope and spectrometer. Starting from this point, the undulatory theory of light is propounded, illustrated, and defended.

Further phenomena are then investigated, and other developments of the subject, all of which are shown to be strictly consistent with, as well as to be explained by the wave theory adduced.

This of necessity leads the writer into the difficult theme of diffraction, double refraction and polarisation of light. When essential to the better and more complete knowledge of phenomena, simple mathematical demonstrations are given in an appendix, and abundant illustrative woodcuts are supplied, in order to remove the unavoidable ambiguity of mere description. The portion that will most interest the physicist, though the treatise aims far more at unfolding the truths of science than exhibiting their practical application, is the concluding section on circular polarisation, an abstract study which has borne many directly utilitarian results, not the least of which is the saccharimeter of Soleil. Entirely do we agree with the sentiment expressed by the author, that from the pursuit of knowledge for its own sake the largest benefit may be expected, and we have always thought that the answer to the old question, What is truth? should have been simply—truths. Dr. Eugene Lommel has been most successful in rendering an intricate branch of physics intelligible to his readers.

MESSRS. DEAN & SON, of Fleet Street, the wholesale stationers, have sent us a specimen of a new perfumed almanac they have brought out for 1876. It is printed in gold type, with picture covers, and contains a quantity of conundrums, &c. The same firm also supply perfumed almanacs on card in the form of fans and screens.

IF ANY proprietor of patent medicines or pharmaceutical specialties wishes to exploit his products in Queensland we advise him to communicate with Mr. C. F. Cripps, of Rockhampton, Queensland, who publishes a very useful local almanac there, and will receive the advertised specialties to the extent of the advertisement.

A NOTED BONE-SETTER.

THE death is announced of Mr. James McConachie, the Strathgibby bone-setter, by far the greatest man of his class in the North of Scotland. Mr. McConachie succumbed to an attack of inflammation in the lungs. He was in his sixty-fourth year. The deceased inherited the healing talent and the nucleus of his practice from his fathers, who for generations back resided in the parish of Knockando, and enjoyed a local fame as bone-setters. By the opening of railways in the north, the facilities of communication brought a vastly increased number of patients, until during the last few years it was quite a common thing, hundreds of miles off, to be sent to him for treatment. He was, within the limits of his own ability, he at once sent cases to have proper assistance in which were required the application of the surgeon's knife or the treatment of the physician. Yet he did not fall on occasion to prescribe homely and simple medicines, which generally proved efficacious. It was in the field of the bone-setter, pure and simple, that his talents were conspicuous. In treating sprains, dislocations of the joints, and fractures of the bones, he may be said, we believe without exaggeration, to have been without a rival. His methods were by no means rude; on the contrary, we have excellent authority for stating that they were really scientific, and in reducing certain difficult dislocations, such as might be met with in the best school of the continental surgery. He was most successful in diagnosing and treating spinal ailments; and some of his well-authenticated cures are very remarkable. His loss will be generally mourned over a wide district in the north. He was a bachelor, and his skill dies with him, for there is no one to fill his place.



THE ACTION OF CARBOLIC ACID.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

Sir,—I have on several times read, in different journals, papers by gentlemen who speak of carbolic acid, not as an antiseptic or disinfectant, but as a body which simply masks putrid odors by its own smell, and some even go the length of questioning which smell is the worse of the two. Mr. R. Rother, in writing to the *Tennessee Pharmaceutical Gazette*, a copy of which appears in the last number of your valuable journal, expresses one of those views. A few years ago I conducted a number of researches, under the direction of my late partner in professional business, on the subject of the antiseptic properties of carbolic acid. A few of our experiments may be of interest in showing the effects of bodies which can only be classed as deodorisers, and those which may be classed as antiseptics, on putrefaction.

If a solution of the white of an egg be mixed with pure water, and left exposed to the atmosphere, only one class of animalculæ will be found by microscopic examination to be present, viz., vibrios; and if such a solution be examined from day to day it will be noticed that these vibrios increase in number, and after a short time a putrid smell is developed, which increases in direct proportion to the increase in the number of vibrios.

We took a solution of albumen which had become quite putrid by the agency of these vibrios for one series of our experiments, with the view to observe the actions of different chemical bodies on the animalcule, and on the smell. By treating some of this liquid with permanganate of potash till the liquid ceased to decolorise the permanganate, we found that the smell had entirely gone, but on examining the fluid microscopically we observed that the animalcule were swimming about with greater energy than before. Carbolic acid in the proportion of one part was added to one thousand parts of the above-mentioned original solution teeming with vibrios. The smell immediately afterwards was as putrid as before, but the smell of carbolic acid could not be detected. On microscopic examination, however, we found that all the animalcule had entirely lost the power of locomotion; some appeared quite dead, and the others were merely moving to and fro. The smell became less and less distinct, day by day, till little or no smell of putridity could be detected. Cresylic acid was found to possess the most potent action on these animalcule. Carbolic acid came next, and these were followed in order by bichloride of mercury and chloride of zinc.

The animalculæ which eat up, or decompose, organic tissues require oxygen for their support, and become sickly-looking, and either cease to swim about or swim very languidly when carbonic dioxide and other noxious gases which they emit are allowed to collect about them ; but if these gases be absorbed by lime or charcoal, for instance, the tissues are quickly decomposed by myriads of these animalculæ, which move about with much energy, and appear to have all that their health could desire.

It appears to me that deodorisers seem to find greater favour in the minds of many than antiseptics.

Yours, &c

Royal Institution, Manchester: W. THOMSON, F.C.S.
Nov. 2, 1875.

THE TRADE IN PROPRIETARY ARTICLES.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

DEAR SIR,—There has been large cry throughout the country against the establishment at stores of dispensing departments, and also against the lowering of the prices of patents and proprietary articles, both at stores and by retail vendors. Now the selling of various articles at a reduced rate by grocers, in order to draw trade to themselves, is becoming a serious matter to the chemists and druggists of the country, and it behoves the

well-wishers of the trade to do something to check the tendency to cut prices down to so low a percentage. To argue that a man may not do as he pleases with what he purchases is absurd, and no good can be obtained by endeavouring to guide any shopkeeper in this way. The only question that has to be answered is whether it is just and fair, either to the manufacturers, the dealers, or the public, to reduce advertised articles below their advertised prices? I maintain that if an article which is a good thing should cost, say, 4s. or 5s. to make as a single article, it ought not to be sold for less than this sum simply because the manufacture of quantity reduces the cost. I further maintain that a man who so reduces the price, not from a desire to serve the public, but merely as an advertisement for his own particular business, is doing an unfair thing and taking a mean advantage of the popularity given to the article by the advertiser. Now chemists and druggists could by real combination so arrange their business as to be unaffected by the sale of specialities, and I would suggest to them the desirability of an organisation which should give them a fair living profit out of their returns.

The very small sums that can be generally returned make it necessary for the druggist to have large profits, and were the trade to arrange a tariff of charges which should be followed throughout the length and breadth of England, all would stand on the same footing, though of course then, as now, one man would have better trade than another, either from business capacity or from position of premises, but certainly not by underselling his neighbour. It would be well, too, if chemists and druggists would take full advantage of the Adulteration Act. They would then compel the public to appreciate quality as against price. I would give here a word to manufacturers, and that is, it would be as well for them to take advantage of the profits as to allow the cutting traders to throw away what has been a generous profit to induce the sales. I would also point out to them that from my point of view it is, although perhaps more troublesome, more generous and more public spirited to see prosperity among the many rather than among the few. A means for stopping the reduction of advertised prices would be to raise the wholesale price to within 10 per cent. of the advertised price, and allow any further percentage to those only who took active interest in promoting the sale of the article.

It is chemists and druggists who start things by introduction, but as soon as the article becomes established up start a lot of pirates, who rob them of their trade and profit. Certainly things want some alteration, and I should be glad to find Englishmen acting more in accordance with the proverb with which I finish my scribble—

"LIVE AND LET LIVE."

PHARMACEUTICAL EXAMINATIONS. — "JUSTICE" VERSUS "LAW."

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—Permit me, Mr. Editor, through your valuable journal, to say a few words respecting the examinations. I think it would have been more suitable for me to have headed my remarks, "Law" versus "Justice," instead of the reverse, since the examinations are enforced by "law."

Now, I think it a very unjust thing for a young man accustomed to a mixed country drug business, who, perhaps, only dispenses a prescription once in six months, to have to go through exactly the same examinations as the man who is kept dispensing or prescribing from 8 A.M. to 7 or 8 P.M. Perhaps some reader may say the above is a false representation: I assure such a one it is not. A young man in a mixed country business such as I have alluded to often sees the oil can and paint tin than a doctor's prescription.

Many young men, not having means to enable them to pass the "rigid Minor," are utterly compelled to leave the business, and to remedy this I suggest that in large towns, such, for instance, as Bradford, Leeds and Huddersfield, in the West Riding, there ought to be a board of examiners, chemists of the above-named towns, gentlemen who know the requirements of anyone in businesses such as I named above—not for a young man to have to go to the expense of going to London or Edinburgh—a waste of precious time and hard-earned money;

and I am sure of this, the pay of assistants in the drug trade won't allow of much to be wasted. I cannot conclude my remarks better than in the words of the song,

Justice and Law—Justice and Law—
Masters get Justice—Assistants the Law.

Thanking you for your kindness in inserting this letter,

I am, Mr. Editor,
Bradford: October 27, 1875. AN ASSISTANT.

IRELAND.—THE REGISTRATION FEE.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—In your report of the proceedings of the Council of the Pharmaceutical Society of Ireland (*vide* No. 10, p. 343) there occurs a slight error, which might lead to some confusion, and, therefore, I think it desirable to draw your attention to it.

The fee for registration is stated to be three guineas. It should read five guineas.

The following is the regulation:—

"The fee to be paid by each candidate for the title of Pharmaceutical Chemist shall be five guineas, of which, in case of rejection, three guineas shall be returned to the candidate."

I remain, sir, &c.,

Dublin: November 5, 1875. CHAS. R. C. TICHBORNE.

A WRINKLE FOR DISTRESSED CHEMISTS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—For the benefit of any of the brethren whose trade is rather slow and uncertain I would suggest for their consideration a dodge practised by a distinguished pharmacist in this town. If anyone calls casually at his shop and gives an order for a season article, such as "Down's Farmer's Friend" or the like, a note is made of the transaction, and next season another similar parcel is sent in without any order, on "spec." The people do not much like it, but they say, "We don't like to return the poor man's goods," and so they are kept, and the chemist gets his cash. Of course this hint will not do for those who claim to be "business men," and I hope most of our calling have too much trade and too much dignity to send their goods out in this fashion.

Yours respectfully,

B.

[We suppress the locality, as we see no reason to apply this rub personally.—Ed. C. & D.]

SYNONYMS.

TO THE EDITOR OF "THE CHEMIST AND DRUGGIST."

SIR,—The following are a few synonyms which may be added to your collection, as I do not find them in previous lists.

I am, yours respectfully,
J. S.

Black pitch.....	Emplast. oxyered
Blue uncton.....	Ung. hydroxypti mitor
Chillies.....	Capsicum indic
Cocky-lind.....	Cocculus indic
Dragon's blood.....	Emplast. robortans
Essence of sugar.....	Oxalic acid
Green treat.....	Emplast. mellitoli
Gum drag.....	Gum tragacantha
Kermes mineral.....	A sesquiphosphat of antimony
Rail, sagittatus.....	Arrowroot
Saltetre balls.....	Salt prunella balls
Sulphur of ivy.....	Sulphur vivum
Sweet iron drops.....	Syr. ferri iodidi
Turbitih mineral.....	Sulph-sulphate of mercury
Volatile.....	Ammoniac carbonas
White precipitate.....	Hydrargyrum ammoniatum



CITRATE OF MAGNESIA.

As mentioned in our last, a prosecution was commenced on September 21 against James Kerr, a chemist and druggist, of Greenock, under the Adulteration Act of 1872, in respect to the sale of citrate of magnesia alleged to be adulterated with carbonate of soda, tartaric acid, sugar, and sulphate of soda. After several adjournments the case was finally tried at the Police Court, Greenock, on October 16, before Bailie Paton.

Considerable interest had been aroused in this case among the local pharmacists, the chief of whom came forward to give evidence in favour of the defendant. Besides these, as will be seen, two local medical practitioners, two well-known pharmacists and a lecturer on chemistry from Glasgow, and the representative of an Edinburgh wholesale firm also supported the defence.

Mr. James Auld prosecuted, and Mr. Macdonald (of McClure & Macdonald) appeared for the defence.

Mr. Young, Inspector of Weights and Measures, and Ewen McIntyre, police sergeant, deposed to having purchased the article in question and handed it to the analyst.

Mr. Wm. McCowan, F.C.S., town analyst, stated that the citrate of magnesia had been adulterated with the ingredients mentioned above. On cross-examination he deposed that he found a trace of citric acid in the sample and also a small quantity of magnesia; that he could not say whether the sulphate of soda was there as an adulteration or that it arose from decomposition caused by the acid; that he considered the stuff sold a vile adulteration, and that the pure article could be got as an article of commerce, and that he had got some. On being interrogated as to where he got the pure article produced he admitted that he had got it from a manufacturer of chemicals for scientific purposes, after applying to Frazer & Green, druggists, Glasgow, and at the Glasgow Apothecaries' Hall, for the pure article without getting it. He did not apply to any druggist in Greenock because he believed he could not get the pure article. He admitted that citrate of magnesia was not to be found in the British Pharmacopoeia, but was not aware that citrate of magnesia was the name given to a well-known article of medicine compounded in the same way as the sample analysed by him. On being questioned as to his reasons for calling it a vile compound, he admitted it was not injurious to health.

Dr. Machattie, as an analytical and consulting chemist, and neither a prescriber nor dispenser of medicine, gave evidence that the sample was practically similar to that sold by all druggists under the same name; that the name did not lead him to suppose it was a true citrate of magnesia, any more than he would expect a sample of so-called black-lead to contain lead. The name was a purely conventional one. Indeed, like many other mere mechanical mixtures, no short intelligible name could be given to it which would describe its true nature. A complete statement of the proportions and nature of the materials entering into its composition could alone correctly inform the public as to what they were purchasing. Such a system carried out to its full extent in dispensing drugs seemed to him as impracticable as it was useless.

Drs. Whiteford and Robertson, of Greenock, gave evidence that they frequently prescribed "citrate of magnesia;" that under that designation they always meant the compound in question; and that they would consider any druggist dispensing a true citrate of magnesia to be acting wrongly, and not according to the intention of their prescription. They agreed that should an occasion arise (which, however, did not appear to be in the least degree probable), when they really wished to prescribe a true citrate of magnesia, they would certainly inform the druggist, orally or in writing, that such was their intention.

Mr. Alexander Kinnimont, Glasgow, said that the citrate of magnesia was exactly the same compound as sold in Glasgow, and known by the same name as the article sold by Mr. Kerr.

Various articles, such as cold cream and golden ointment, were sold by the trade, but no purchaser could expect either cream or gold in either of these preparations. He considered it no adulteration to sell the citrate of magnesia as sold by accused.

Messrs. Thomas Davison, Glasgow, Archibald MacNaught, Thomas Fisher, Robert Mill, and George Armytage, chemists in Greenock, also testified that the citrate of magnesia sold by Mr. Kerr had been known in the trade for more than twenty-five years, first as originally introduced by the late Mr. King as a proprietary medicine, and latterly in the more elegant form invented by Mr. Bishop; that it was the only article known to or used by the public as a domestic remedy, the true compound of citric acid and magnesium being unknown in the retail trade, and differing so much in dose and medicinal effects as to be entirely unsuitable for the purposes to which the citrate of magnesia in question had been found so well adapted; consequently that this was the only preparation that a chemist would be justified in selling to a customer who asked for citrate of magnesia, unless a specific indication was given that a true citrate was wanted. They agreed that they invariably dispensed a similar preparation to that on which the charge was founded when a prescription demanded citrate of magnesia. They considered that to do otherwise would be wrong, even if they possessed a true citrate of magnesia, so thoroughly did all members of the medical profession understand the purely conventional character of the name. Moreover, there was no citrate of magnesia mentioned in the British Pharmacopoeia.

Mr. Auld (the prosecutor) addressed the court at considerable length. He claimed to have proved his case, and, amid, hisses, denounced the chemists of the town for coming forward to support a fraud. He said true citrate of magnesia would sell at about 3d. per ounce, whilst one of the ingredients in this compound, sulphate of magnesia, sold he did not know how many pounds for 3d. Further on he called attention to the small quantity of magnesia present in the sample, just sufficient to swear to, and concluded by reading Mr. McDermott's case, where the defendant was fined 10s. The two cases he held to be exactly similar.

Mr. Macdonald, in replying, held that the prosecution had entirely failed in their attempt to break the main point of his defence, viz., that true citrate of magnesia was unknown as an article of commerce in this country, and that the compound supplied was the only article his client was entitled to give when citrate of magnesia was demanded. The evidence of Dr. Machattie, who had analysed many samples of citrate of magnesia, showed that they had all, with slight variations, a similar composition.

The evidence of the medical gentlemen showed that when they prescribed citrate of magnesia they expected the compound article to be dispensed, whilst that of the Glasgow and Greenock druggists showed that the article supplied by Mr. Kerr, was in their opinion, the only article they would be entitled to dispense when citrate of magnesia was prescribed or asked for, and that they would be committing an error if they supplied true citrate of magnesia. Mr. Cross's evidence proved that the house represented bought the article from the manufacturers, that they sold it as they got it, and also that Mr. Kerr sold it as obtained from them.

Referring to the London conviction, Mr. Macdonald explained that the case was not *defended*, or it would in all probability have been attended with a very different result, and at all events His Honour was bound by no precedent, and that taking the new Act as explaining the intention of the old one, his client was quite entitled to sell the article as citrate of magnesia.

He concluded an able address by asking His Honour to take a common sense view of the question.

Bailie Paton said: I must state that this is a most important case, affecting the whole drug trade. I acknowledge the ability of the agents in mastering a technical subject, and also the great scientific research of the professional witnesses examined to-day. The question is simply this—Was this citrate of magnesia adulterated? Taking the evidence as my guide, I must say that the proof fails to substantiate the charge against Mr. Kerr. Drs. Whiteford and Robertson have stated that if they prescribe citrate of magnesia the article sold by Mr. Kerr is what they wish, and not the article known as pure citrate of magnesia. Although the professional gentlemen differed to some extent, they substantially agree that the medicine before the Court, while not pure citrate of magnesia, is the article of commerce known by that name. The term does not appear in the Pharmacopoeia. I think that the dispenser of drugs is quite

November 15, 1875.]
 could be sold the article
 when it is made a
 subject for the medical
 quality of the alleged
 Mr. Macdonald applied
 effect, the magistrate
 a dispensing the case.
 The juryman was recu-
 sit boys.
 Sir—Kissly gave
 understood and
 citrate of magnesia
 At the same time
 Dr. Kerr, Glasgow, for
 and the available
 response.
 I consider they have
 for the whole trade
 Macdonald
 John White
 Thomas Argytage
 Thomas Fisher
 Robert Mill
 William White
 John A. Ross
 John A. Fisher
 John A. Fisher
 George Wilson
 James Kerr
 Dr. Andrew Douglas
 James Auld
 John E. Stirling
 John Smith
 John Macdonald
 James Graham.
 Expenses—
 Messrs. McCh-
 Balance, 4s.
 at the Lincoln Co-
 Mr. J. F. Clarke
 services alleged
 the course of
 correspondence
 these columns.
 42 in all. In the
 was now demand
 a bill for 2s. 2d.
 has paid, and
 was indebted
 O'Sullivan's account
 plaintiff in the
 on April 1869
 the plaintiff
 he could not
 he promised
 He never had
 his debt paid
 him when he
 could have
 object of show-
 defendant. The
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 stated charge
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 At the St.
 Davies as
 selling a
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from property held as security. The following are in the list of creditors:—

	£	s.	d.
W. J. Lemaitre, 101 Pentonville Road	169	6	8
Langton & Co., 226 Upper Thames Street ..	122	12	0
Battley & Watts, 22 Whitecross Street ..	42	5	8
Letchford & Co., Three Colts Lane, Bethnal Green	40	11	1
J. Minchin, Albion Place, London Wall ..	40	1	8
Ford & Shapland, 5 Great Turnstile ..	34	19	0
G. & E. Cockburn, Osnaburgh Street, N.W.	25	0	0
R. Edgar, Edgware Road	24	18	0
W. H. Child, 43 Worship Street	24	4	4
J. & W. Jeal, 80 Old Street	19	19	0
W. Horring & Co., Wilderness Row	19	11	1
S. Foulger & Son, 133 St. George's Street ..	15	19	11
M. A. Hyem, 35 Redworth Street, Kennington ..	11	0	0

Mr. Neal, who appeared for the trustee, said that negotiations were in progress for the sale of the bankrupt's business, and would be concluded in about a month. He therefore suggested a further short adjournment. The Registrar: The only question is whether the bankrupt has disclosed all his estate. In reply to Mr. Neal the bankrupt said that he had given up the whole of his furniture; it was worth about 100*l.* He commenced business in the name of Wright & Son, and borrowed money on a bill of sale in that name.

His Honour allowed the bankrupt to pass his examination.

IN RE MYLIUS COHEN.

The bankrupt came up for his public examination on November 10, before Mr. Registrar Murray. He was described as of 30 Fish Street Hill, manufacturer of chemicals and chemical manures. He returns his debts at 4,640*l.* 7*s.* 6*d.* and assets 2,720*l.* 12*s.* 10*d.*, consisting principally of property at Berlin. It being stated that overtures had been made with a view to an arrangement, and that the trustee was engaged in investigating the bankrupt's books, and making inquiries respecting the property at Berlin, His Honour, by consent of all parties, allowed an adjournment.



[The following list has been compiled expressly for THE CHEMIST-AND-DRUGGIST by L. de Fontaine-Moreau & Co., Patent Agents, 4 South Street, Finsbury, London; 10 Rue de la Fidélité, Paris; and 33 Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

2911. E. G. Brewer, of London. A new or improved disinfectant. Dated August 18, 1875.
3089. D. Dow and J. Telfer, both of Glasgow. Improvements in obtaining free chlorine from chlorides. Dated September 3, 1875.
3153. D. Dow and J. Telfer, both of Glasgow. Improvements in obtaining oxide of manganese from the chloride, which improvements are applicable for manufacturing nitrates of the alkalies, and for obtaining free chlorine from chlorides. Dated September 8, 1875.
3246. F. W. Schreiber, of Bond Court. Improvements in apparatus for capturing bottles and similar articles. Dated September 16, 1875.
3262. H. Y. D. Scott, of Raling. Improvements in the treatment of phosphates of iron and alumina, and obtaining useful products therefrom. Dated September 17, 1875.
3311. H. B. Box, of Orton, Chester. Improvements in and applicable to stoppering bottles or other receptacles containing liquids, whether gaseous, aerated, or otherwise. Dated September 22, 1875.
3332. G. Gibbs, of Hamsted, Yorkshire. An improved method of stoppering bottles intended to contain effervescing liquids. Dated September 23, 1875.
3358. T. Robinson, of Widnes, Lancaster. Improvements in apparatus or appliances to be used in the manufacture of sulphates of soda and potassa. Dated September 23, 1875.
3464. E. J. Hally, of Cornhill. Improvements in stoppering bottles. Dated October 5, 1875.
- Letters Patent have been issued for the following:—
1141. B. Clayton and J. Wilkinson, both of Bradford. Improvements in stoppers for bottles and similar vessels. Dated March 30, 1875.
2148. E. A. Parnell, of Swansea, Glamorgan. Improvements in the manufacture of arsenic acid, arsenious acid, metallic arsenic, and binarsenate of soda. Dated June 11, 1875.

2284. J. Scofield, of Lancaster Road, and R. J. Atcherley, of Penroed Villas, both of Holloway. Improvements in the manufacture of acetic acid. Dated June 22, 1875.

2669. C. Heinzerling, of Glasgow. Improvements in the manufacture of bichromate of potash and in the manufacture of iodine and bromine. July 28, 1875.

2808. J. Waugh, of Glasgow. New or improved apparatus for charging bottles or other vessels with gaseous or effervescing liquids, and improvements in closing bottles containing such liquids, and in the machinery employed therefor. Dated August 10, 1875.

2873. C. F. Burnard, of the Plymouth Chemical Works, Plymouth. Improvements in the manufacture of sulphuric acid. Dated August 14, 1875.

Specifications published during the month:—

Postage 1*d.* each extra.

1875.

474. T. W. Wilson. Cleaning bottles. 1*s.*
490. L. Vallet. Stoppers for bottles. 10*d.*
518. R. Milburn and another. Drying soda ash and ores. 10*d.*
563. A. M. Clark. Ammonia. 4*d.*
566. W. B. Gething. Filters. 4*d.*
580. A. Howat. Filling and closing bottles. 4*d.*
633. W. D. Napier. Tooth and flesh brushes. 4*d.*
656. W. A. Lyttle. Toilet soap. 4*d.*
658. E. P. Potter. Concentrating acids, &c. 4*d.*
886. J. T. Way. Producing soluble phosphates of lime. 6*d.*
746. J. White. Manufacture of chromates of potash and soda, &c. 4*d.*
756. N. Thompson. Stoppering bottles, jars, &c. 4*d.*
796. Eliza Lawrence. Compound for removing corns, &c. 4*d.*
906. H. Deacon. Manufacture of chlorine. 4*d.*



BANKRUPTS.

- AYRES, JAMES W., 4 Park Street, East Greenwich, physician. Oct. 15.
- HELE, NICOLAS F., Aldborough, Suffolk, surgeon. Oct. 15.
- VANDELIER, CHARLES & ARTHUR WALKER, trading as Vandelier, Son & Walker, 48 Upper Thames Street, drysalers. Oct. 29.

LIQUIDATIONS.

(By arrangement or composition.)

- Notices of first meetings have been issued in re the following estates. The dates are those of the petitions:—
- COLLINS, HENRY, Lewin's Mead, Bristol, and Fishponds, Gloucestershire, vinegar merchant, and dealer in grocery, drugs and druggists' sundries. Oct. 13.
- DAIZLET, JAMES, South Shields, surgeon. Oct. 11.
- DAY, JOHN, JUNR., Eastrop, near Basingstoke, veterinary surgeon. Nov. 2.
- DICKINSON, ARTHUR J., Trundley Lane, Deptford, and 39 Lewisham High Road, chemical manufacturer. Oct. 15.
- DYSON, JOHN, JUNR., trading as Dyson & Co., Albion Yard, Huddersfield, manufacturing chemist and tea dealer. Oct. 12.
- EVANS, OWEN, South Street, Thurlow Square, West Brompton, surgeon. Nov. 2.
- EWYEN, ARTHUR B., Long Sutton, Lincolnshire, surgeon. Nov. 5.
- HARRISON, EDWARD, Lancaster, surgeon dentist. Nov. 2.
- JOHNSON, MARK, Blacklow Road, Hinton, Lancashire, chemist. Oct. 26.
- MACHAM, JAMES B., 128 Steadhouse Lane, Birmingham, chemist and druggist. Oct. 22.
- MUNSLOW, REUBEN, Droitwich, Worcestershire, veterinary surgeon. Oct. 27.
- NASH, JOSEPH, Bewdley, Worcestershire, saddler and veterinary surgeon. Oct. 20.
- OWEN, JAMES, Great King Street, Birmingham, chemist. Oct. 20.
- TAYLOR, FREDERICK & CHARLES BLOOD, trading as Taylor, Blood & Co., Concert Street, Liverpool, druggists. Nov. 6.

PARTNERSHIPS DISSOLVED.

- BARRY & Co., Type Street, and Rotherhithe, cocoa, chicory and mustard manufacturers. Aug. 18.
- BRABANT & BOND, Hyatt, surgeons. Sept. 24.
- BUTNER & NELL, Nottingham, surgeons. Oct. 12.
- COLLINS & WEBB, Newnham and Blackeney, Gloucestershire, surgeons. Aug. 23.
- HOWARD, E. G. R. & J. C. Clitheroe, Lancashire, wine merchants and chemists. Dec. 31.
- As regards Edmund G. Howard.
- PETZOLD & MACONOCHE, 168 City Road, chemists and merchants. Oct. 22.
- SHERLOCK BROS., St. Helen's, Lancashire, chemists. Oct. 4. Debts by Thomas Sherlock.



TERMS.—Announcements are inserted in this column at the rate of one halfpenny per word, on condition that name and address are added. Name and address to be paid for. Price in figures counts as one word.

If name and address are not included, one penny per word must be paid. A number will then be attached to the advertisement by the Publisher of THE CHEMIST AND DRUGGIST, and all correspondence relating to it must be addressed to the "Publisher of THE CHEMIST AND DRUGGIST, Colonial Buildings, Cannon Street, London, E.C.," the envelope to be endorsed also with the number. The publisher will transmit the correspondence to the advertiser, and with that his share in the transaction will cease.

FOR DISPOSAL

Small cask coloured arsenic. Gloyne, Dewsbury.

One doz. Leeming's ess.; clean; 15s. Carriage paid. Fortane, Anstruther.

Brook's "Cyclopaedia of Botany," 720 pp., 550 coloured illustrations; 10s. 6d. J. Tully, Chemist, Tunbridge Wells.

Avery's Weighing Machine; 4 cwts.; in good condition; 3l. 3s. Jenkins, Chemist, Nottingham.

Rack and pinion bottling apparatus; used only four months. 5l. 5s. F. Wheeler, Guildford.

A few Gazogenes of the best French manufacture, quite new, to be sold at less than makers' prices. 15/230.

Four ounces high methylene, quarts and pints Freeman's annatto. What offers? Cocking, Chemist, Sittingbourne.

"Pharmaceutical Journal," 1874; also present year posted to end; the lot, 10s. 6d. 14/118.

Bedept or bedette, cheap, painted walnut; oil cistern holds about 120 gals. Mrs. H., 15 Goodham Hill, Burnley.

A number of shop bottles, viz., 72 4, 6, 8, 16 oz. W.M.; 60 do., do., N.M.; also drawers and fixtures. Davies, Ruabon.

Muter's "Chemistry," free by post, 10s. 6d. H. L. Walsham-le-Willows, Suffolk.

A 6-hole cigar case, nearly new, 10s.; balsam tolu, 20s. lb. Padwick, Redhill.

Gas furnace, Dr. Normandy's, fair condition, minus tubing; offers wanted. Marshall, Montgomery.

I have iron tincture press, 4-gallon, that I wish to exchange for a gas or petroleum stove for shop. 10/120.

Small founts of new type; surplus stock; specimens on application. 12/120.

A 4-gr. pill machine, to make 12, as good as new. Address, Mr. Sidney Smith, Medical Hall, Glastonbury.

40 lbs. chlorodyne cough loz. exchange for tooth instruments, books, &c.; or bargain for cash. Meldrum, St. Leonards, Edinburgh.

One to two tons of good English under paint in oil to be sold cheap; any sized lots. Offers solicited. Sample sent free. Thos. Taberner & Co., 31 Rochdale Road, Manchester.

Bottles, 32 oz. ovals, York Glass Co.'s make, 1s. 6d. per doz.; also, 16 oz. flats, 1s. per doz. Apply to Gay & Co., chemists, Stroud.

Bunsen's galvanic battery, containing 21 cells; has been used very little; cost 16l. What offers in cash? E. Gould & Son, 32 Moorgate Street.

Coolley's "Receipts," second, 9s. Davis's "Obstetric Medicine," 7s. 6d. (cost 21s.) &c. See last few numbers. M. P., 24 Whitcomb Street, Leicester Square, W.C.

For sale, a set of dental instruments, 18 in number. Latest make of forceps and chiefly new. Instruments selected by a dentist. Price 3l. 30/120.

20 vols. "Pharmaceutical Journal," unbound, clean; indices; no offer refused, or would exchange for medical or anatomical works. 81 Moor, Sheffield.

The complete fixtures of a country chemist's shop; nearly new, including counter, glass cases, drawers, bottles, jars, &c.; suitable for small business; cheap. 26/120.

"Pharmaceutical Journal," January, 1871, to December 31, 1874, with one exception. Sale or exchange. C. B., 1 Russell Gardens, Kensington.

Printing press, prints 4½ by 5½, ink roller, ink slab, composing-stick, 2 cases of types, one font loose (not mixed), in complete working order. Price 30s. W. Todd, 27 North View, Heaton, Newcastle-on-Tyne.

Tincture press, one-and-a-half gallons, in good condition, price 15s.; also a handsome soda-water stand; cost 3l.; price 3l. 10s. Apply to Mr. Harle, 23 Essex Street, Islington.

Aitken's "Practice of Medicine," 5th edition, 21s.; Erichsen's "Surgery," 5th edition, 20s.; Beasley's "Formulary," 8th edition, 5s.; Kirke's "Physiology," 6th edition, 5s. Edmund Taylor, chemist, Droitwich.

Three-throw stove, 3 ft. 3 in. by 2 ft. 5½ in. high; sand ball, 2 ft. by 16 in., 4½ in. deep; drying closet, 17½ in. by 22 in., 20 in. deep. No reasonable offer refused. State price to W. G., 6 Lower Belgrave Street, London.

Offers wanted. Atfield's "Chemistry," 4th edition; Barff's "Chemistry," 3rd edition; Squire's "Companion," 9th edition; Steggall's "First Lines," 3rd edition. J. Watson, 4 Bridge Street, Newbiggen-by-Sea, Morpeth.

Blackie's "Popular Encyclopedia," 14 divisions, last edition, published at 7l.; Pereira's "Materia Medica," 3 vols. For collection of chemical apparatus and tests, or offers. Address, T. Thomson, Post Office, Bath.

In consequence of alterations, a mahogany plate-glass show-case, as Fig. 3 in Maw's catalogue, bent top, carved scroll, 4 ft. long, 2 ft. wide, 2 ft. high, in perfect condition, cost 15l. 4s. Treble's make; lowest price, including packing, 9l. Monkhouse, Chemist, Derby.

"Pharmaceutical Journals," 1873 and 1874; Dr. Smith's "Latin-English Dictionary," cost 7s. 6d., nearly new; "Pharmaceutical Journal," posted day of arrival. What offers for either? T. W., Post Office, Hemel Hempstead, Herts.

A set of 11 tooth forceps and 6 sealing instruments in mahogany case, nearly new. 2l. 10s. Also a 6-chambered revolving pistol in mahogany case with bullet mould, powder flask, &c., 25s. Sheel, chemist, Low Fell, Gateshead-on-Tyne.

A 60 brass-ware oak sieve, with drum complete; good condition; price 7s. 6d.; Maw's price 15s. Also Royle's "Materia Medica," last edition, 9s., published, 12s. 6d. Beasley's "Formulary," eighth edition, 6s., published, 6s. Wooster, Broadway, Turnham Green.

Iron Mortars; 3-pint tincture press, 12s.; 6 lb. com. sponge, 5s.; 12-gallon copper still; 28 lbs. Cochlin ginger, 10d.; several seed mills, hydrometer, 2 lbs. Tonguin beans, 1 lb. bals. Tolu, 1½ lb. mastic, 2½ lbs. lobelia inflata, 20 Crosse & Blackwell's pickles, sauces, clean, unwrapped, 10s.; 4 Dietrichsen and Hannay's Rondeletia, 8s.; 2 dozens 6d. globules, 6s.; books and surplus patents. Cash or exchange. R. C. Mason, Bromsgrove.

"Homeopathic Pharmacopoeia," 3s. 6d., cost 6s.; fifteen hair brushes, assorted, 7s. 6d.; eleven children's do., assorted, 4s. 6d.; three 1s. and six 6d. toilet requisites, 3s.; nine 1s. boxes soap, 4s. 6d. All the above in good condition; considerably under wholesale price. Horton, 171 High Holborn, London.

Burette and stand, 3s. 6d. Litre flask, graduated, 1s. 3d. Lactometer, 1s. Garrod's "Materia Medica," 6s. Muter's "Materia Medica," 3s. Seven B. P. Botanical plates, 2s. 9d. Babington's "British Botany" (new) 8s. Lescher's "Elements Pharmacy," 4s. 6d. Bloxam's "Laboratory Teaching," (new) 6s. Kidd, 38 Northbrook Street, Newbury, Berks.

A Bargain. The fittings of a shop, viz., fixtures, counters, bottles, jars, show carboys, glass cases, to be sold cheap. 81 Moor, Sheffield.

Homeopathic Medicines, by Thompson & Capper, Liverpool:— 2 doz. 6d. globules; 2½ doz. 6d. tinctures; 8½ doz. 1s. tinctures; 1 doz. 6d. pills; 1 doz. 1s. pills; 2 6-gall. pear-shaped carboys; 1 tooth-brush case, new, as fig. 8, Maw's; pedestal scales, as fig. 5, Maw's, to weigh 4 lbs.; beam scales, as fig. 1, Maw's, to weigh 7 lbs.; set of weights, brass, from 4 oz. to 1 lb. Offer wanted; cash or payments. R. C. Turner, chemist, Douglas.

Entire nearly new handsome Chemist's Shop fixtures and utensils, consisting of 200 shop drawers, gold labelled, with glass knobs; bent, flat, upright show cases and desks, 12 feet long mahogany-top counter with drawers, window enclosure, shelving, soda-water stand, 500 shop bottles, 78 1-lb. dome-shaped superior shop jars, 78 1-lb. ditto, 12 4-lb. ditto, iron, marble, composition mortars and pestles, shop lamp and bracket, pill machines, 2 and 5 gr. Lloyd Rayner, 333 Kingsland Road, London.

To be disposed of, in consequence of alterations, shop clock, 21s.; complete apparatus for making nitrous oxide, including, 40-gall. gasometer, 34.10s.; a few pill and ointment jars and shop bottles, cheap; brass counter scales, 18s.; 80-gall. leaden oil cistern, 70s. (new); also Attfield's "Chemistry," 5s.; Wanklyn's "Water Analysis," 2s.; Maw's beef tea apparatus tin, 2 lbs. 6s. 6d.; few sundries and patent medicines at 30 per cent. discount; set volumetric apparatus, 10s.; 1½-gall. still and condenser, 8s.; Huyard-Janos water, qts., 9s. doz. Chemist, 11 Eagle Parade, Buxton.

One pair specie jars in fine condition, 30 in. high, gold glass covers, 6l. pair; one pair do., handsome device, 24 in. high, 3l. pair; eighteen glass jars, elaborately labelled in gold and colours, as good as new, glass gold covers, about 9 to 10 in. high, 6s. 6d. each; 6 as Maw's fig. A, almost new labels, as above, about 15 in. high, 8s. 6d.; 21 black stock bottles, japanned caps, 1½ and 2 galls., very good labels, 2s. 6d. each; 12 green glass do., japanned caps, good labels, 2s.; 6 carboys, 3 doz. wt. ointment jars, 1s. 6d. each; 6 doz. brown stone jars, japanned covers, 6d. each; 3 nests of drawers, mahogany front, dovetailed, with lockers under, 1s. 9d. per drawer, no charge for lockers; a circular-framed glass counter case, almost new, as Maw's, 3 ft. long, 17 in. wide, 8 in. deep, sloping shelf at back, 45s.; a 5 ft. do. do., as Maw's 105, 4l. 10s.; a do. do., 3 ft. long, as Maw's, 45s.; a 6 ft. do. do., 23 in. wide, 8 in. deep, ebonyed mahogany, 6 velvet-lined trays, as Maw's, 6l. 10s.; a sponge case, as Maw's 92, 5l. 5s.; a plate looking-glass, 62 by 25, 60s.; a do. do., 66 by 18, 55s.; also some silvered plate glass, from 5 to 12 in. wide, and up to 60 in. long. Natali Bros., 213 Old Street, City Road, E.C.

WANTED.

THE CHEMIST AND DRUGGIST, July, 1874. Heald, Sleaford. Tincture press on feet (half-gallon); pill machine, to cut 24 5-grain pills. March, Chemist, New Brompton, Kent. Pereira's "Materia Medica," last edition. Price and condition. Townley, Keswick.

Microscopic object glass, $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{4}$; also a letter-copying press, size 18 inches by 12 inches. 33/119.

Acton "On Reproductive Organs;" Muter's "Chemistry;" Beasley's "Receipt Book." 33/120.

Store bottles or boxes to furnish shop cornice 26 feet long. Proctor, Westmoreland Street, Newcastle-on-Tyne.

Three-gr. pill machine, in good working condition. Address, stating price, 81 Shudehill, Manchester.

Counter desk, with mirror-back glass case in front, or glass case only. Heald, Sleaford.

Bentley's "Botany," Roscoe's "Chemistry," Barber's "Pocket Pharmacopoeia." State price and condition. F. D. B., 55 Westgate, Wakefield.

Plate glass counter case, 10 feet by 2 feet, or two cases 5 feet by 2 feet; also lozenge jars. Humphreys, Bull Street, Birmingham.

Pair vestibule doors; glazed; height, 7 ft. 6 in.; width together, 4 ft. State price and material to Peake, Chemist, Earlestown, Lancashire.

Dispensing screen, Maw's fig. 164; 4 feet 4 inches long, 24 or 27 inches high, 6 inches deep. Jones, Chemist, Treherbert, Pontypridd.

Attfield's "Chemistry;" Pereira's "Materia Medica," abridged; Gamgee's "Our Domestic Animals in Health and Disease," 2 vols.; Dr. Coffin's "Botanic Practice." All latest editions. Address, Mungo, Post Office, Stroud.



THE official account of our export trade published by the Board of Trade still continues to indicate a decline. The figures for October were more discouraging than ever. A difference of about three million pounds in the value of a month's business, as compared with last year, is a very serious matter, and unless it is explainable on the hypothesis that business is dull all the world over, England's commercial position may be said to be on the wane.

Chemicals are generally firm, and although there is not a large business progressing, yet the works in the North are fairly occupied, and makers seem resolved not to reduce their prices further, though they are well aware that very small concessions would decide a good many contracts now in abeyance.

Quicksilver, after almost touching 15l., towards the end of last month, was unsaleable, and has since come down step by step until it is now quoted at 9l. 10s., and is dull at that.

Sales at auction have been plentifully supplied with drugs, but the buying has not been animated, and prices show but little variation. Last week 32 cases of jabonardi were sold at 1s.; some other samples, damaged and stinky, at 4d. to 5d., and one case of very choice was bought in at 5s. Two cases of guarana were bought in at 15s. Large quantities of Californian borax are now being received, and as it is said to answer better for some of the purposes for which borax is used, full prices are obtained. 139 cases of concentrated last week were bought in at 45s., but as the supply is very abundant, we expect to see a fall in the price of this article. Twenty-one kegs of Peruvian iodine were bought in at 6d.; 7d. is asked from buyers, but they are not sufficiently in want to pay that for it at present. This product may also be expected to decline. A case of bergamot was bought in at 17s. and lemon at 10s. Kamala was bought in at 1s. 4d. Chilean honey sold at 50s., and some a little higher. Some good-looking balsam copaiva sold at 2s. 7d. and 2s. 8d., and Tolu at 16s. 6d.; one bale of ergot of rye was purchased at 2s. 1½d.; and Irish moss of a somewhat mixed character failed to find a friend at 16s.

An American report says oil of peppermint is coming in from the West in quantities more than sufficient for the demand, there being no disposition to speculate at present prices. Growers in Wayne county are said to have formed a combination, and are holding their stocks.

In the oil market linseed is firm and rape much higher. The latter has made a steady advance and is now quoted at 40l. and 41l. for pale; English or foreign turpentine has advanced to 26s. for American and 25s. 9d. for French, and they can hardly be bought at those rates. Petroleum is also stronger, refined commanding 10½d. Olive is still unchanged. The Italian dealers are still making great efforts to force the price up, but they can make no impression on the market. The last report from Naples is that a great storm had blown the olives off the trees to a great extent, but purchasers are not frightened.

Monthly Price Current.

The prices quoted in the following list are those actually obtained in Mining Lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.

CHEMICALS.

	1875.			1874.		
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
ACIDS—						
Acetic	per lb.	4 to	0 41	4 to	0 0	0 0
Citric	2 10	..	2 11	4 1	..	0 0
Hydrochloric	per cwt.	5 0	..	4 0	..	0 0
Nitric	per lb.	0 5	..	0 5	..	0 51
Oxalic	0 51	..	0 0	0 7	..	0 0
Sulphuric	1 61	..	1 61	1 71	..	0 0
Tartaric crystal	1 61	..	1 61	1 71	..	0 0
powdered	1 61	..	1 61	1 71	..	0 0
ANTIMONY ore	per ton	230 0	..	300 0	..	0 0
crude	per cwt.	37 0	..	0 0	..	0 0
star	59 0	..	0 0	45 0	..	47 0
ARSENIC, lump	30 0	..	0 0	20 0	..	0 0
powder	13 0	..	0 0	10 0	..	10 0
BRIMSTONE, rough	per ton	150 0	..	145 0	..	150 0
roll	per cwt.	10 0	..	10 0	..	10 0
Boric	12 6	..	15 0	11 6	..	12 0
IODINE, dry	per oz.	0 7	..	0 0	..	0 0
IODINE BLACK, dry	per cwt.	8 6	..	0 0	..	0 0
MACVICK, calvery	per lb.	1 6	..	1 6	..	0 0
MERCURY	per bottle	190 0	..	200 0	..	520 0
MINTUM, red	per cwt.	24 6	..	25 0	..	0 0
orange	37 0	..	0 0	36 0	..	0 0
PRECIPITATE, red	per lb.	5 1	..	0 0	..	7 3
white	5 0	..	0 0	7 2	..	0 0
PRUSSIAN BLUE	0 0	..	0 0	0 0	..	0 0
SALTS—						
Alum	per ton	147 8	..	155 0	..	175 0
powder	165 0	..	167 6	165 0	..	0 0
Ammonia						
Carbonate	per lb.	0 7	..	0 71	..	0 71
Hydrochloric, crude	white	per ton	640 0	..	680 0	..
British (see Sal Am.)	395 0	..	395 0	..	370 0	..
Sulphate	per ton	885 0	..	890 0	..	880 0
Argol, calc	per cwt.	85 0	..	94 0	..	93 0
Red	70 0	..	80 0	..	76 0	..
Oporto, red	35 0	..	30 0	..	29 0	..
Sidly	60 0	..	62 6	..	55 6	..
Ashes (see Potash and Soda)						
Bleaching powder	per cwt.	40 0	..	60 0	..	45 0
Boric, crude	53 0	..	0 0	68 0	..	0 0
British, refined	47 0	..	0 0	7 0	..	0 0
Calomel	per lb.	4 7	..	0 0	..	0 0
Copper						
Sulphate	per cwt.	26 0	..	0 0	..	28 0
Coppers, green	65 0	..	70 0	..	65 0	..
Corrosive Sublimed p. lb.	31 1	..	0 0	6 2	..	0 0
Cr. Tartar, French p. cwt.	112 0	..	0 0	120 0	..	122 0
brown	95 0	..	98 0	..	95 0	..
Epsom Salts	per cwt.	6 6	..	6 6	..	6 6
Glauber Salts	5 6	..	6 6	..	6 6	..
Lime						
Acetate, white, per cwt.	11 0	..	20 0	..	13 0	..
Magnesia: Carbonate	42 6	..	45 0	..	42 6	..
Potash	0 5	..	0 0	0 61	..	0 0
Bichmate	per lb.	0 5	..	0 0	..	0 0
Carbonate						
Potashes, Canada, 1st sort	per cwt.	28 6	..	29 0	..	34 6
Potashes, Canada, 2nd sort	34 6	..	0 0	44 6	..	45 0
Chlorate	per lb.	0 52	..	0 9	..	0 0
Frassate	1 61	..	0 0	1 2	..	0 0
red	3 2	..	3 3	..	2 10	..
Tartate (see Argol and Cream of Tartar)						
Potassium						
Chloride	per cwt.	7 0	..	0 0	..	0 0
Iodide	9 0	..	0 0	7 0	..	0 0
Quinine						
Sulphate, British, in bottles	per oz.	6 6	..	6 9	..	0 0
Sulphate, French	2 0	..	0 0	7 0	..	0 0
Sal Arsenic	0 81	..	0 0	0 10	..	0 0
Sal Ammoniac, Brit. cwt.	44 0	..	45 0	..	44 0	..
Saltpetre						
Bengal, 6 per cent. or under	19 3	..	19 3	..	21 0	..
Bengal, over 6 per cent.	18 0	..	19 0	..	19 0	..
British, refined	22 6	..	24 6	..	25 6	..
Soda Bicarbonate, per cwt.	12 0	..	0 0	15 6	..	0 0
Carbonate						
Soda Ash	per deg.	0 21	..	0 0	..	0 0
Soda Crystals per ton	90 0	..	0 0	100 0	..	102 6
Hypocarbonate, per cwt.	0 0	..	0 0	0 0	..	0 0
Nitrate	per cwt.	11 9	..	12 0	..	0 0
SUGAR OF LEAD, White cwt.	43 0	..	0 0	45 0	..	46 0
SUGAR OF LEAD, Brown, cwt.	32 0	..	0 0	38 6	..	39 0
SULPHUR (see Brimstone)						

DRUGS.

	1875.			1874.		
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
YARROWS	per lb.	1 4	..	1 5	..	0 0
VERMILION, English	1 6	..	0 0	1 6	..	0 0
China	5 6	..	0 0	5 6	..	0 0
ALGOL, Hepatic ... per cwt.	60 0	..	160 0	60 0	..	180 0
Scootrine	60 0	..	200 0	102 6	..	240 0
Saps	35 0	..	0 0	36 0	..	39 0
Inferior	30 0	..	34 6	30 0	..	35 0
Barbados	40 0	..	175 0	40 0	..	180 0
AMBERGUS, grey	oz.	40 0	..	55 0	..	0 0
BALSAM—						
Canada	per lb.	1 9	..	0 0	..	2 0
Opaviv	2 7	..	2 8	2 7	..	2 8
Pert	5 0	..	5 6	5 0	..	5 6
Tolu	5 0	..	0 0	3 10	..	4 1
BARKS—						
Cassia alba	per cwt.	16 0	..	27 0	..	16 0
Cassia	16 0	..	22 6	19 0	..	25 0
Peru, crown & grey per lb.	0 8	..	2 7	0 10	..	2 7
Calisaya, flat	1 10	..	5 4	2 10	..	5 9
Pisco	2 0	..	5 4	0 8	..	2 0
Carthagenia	1 0	..	2 3	0 8	..	2 0
E. I.	1 0	..	4 6	0 7	..	4 0
Pisco	2 0	..	5 4	0 8	..	2 0
Red	1 6	..	4 9	1 3	..	3 10
Buch Leaves	0 11	..	1 0	0 2	..	1 0
CAMPION, China	per cwt.	70 0	..	70 0	..	84 0
Japan	72 0	..	0 0	77 6	..	80 0
Refin. Eng. per lb.	1 04	..	1 1	1 2	..	0 0
CANTHARIDES	3 0	..	60 0	50 0	..	50 0
CHAMOMILE FLOWERS per cwt.	35 0	..	60 0	6 0	..	24 0
CASTOREUM	per lb.	6 24	..	130 0	..	200 0
DRAGON'S BLOOD, p. cwt.	130 0	..	200 0	95 0	..	220 0
FRUITS AND SEEDS (see also Seeds and Spices)						
Anise, China Star per cwt.	110 0	..	0 0	145 0	..	135 0
Spanish, do.	30 0	..	35 6	12 0	..	27 0
Beans, Tanguin	per lb.	1 9	..	3 4	..	3 4
Cardamoms, Malabar good	4 0	..	5 3	4 11	..	5 6
Madras	2 6	..	3 6	2 0	..	4 10
Ceylon	5 8	..	5 10	4 6	..	4 9
Cassia Fistula	per cwt.	12 6	..	15 0	..	14 0
Caster	12 6	..	15 0	14 0	..	16 0
Coccoliths	13 6	..	16 0	14 0	..	17 0
Codonopsis	0 6	..	1 0	0 4	..	0 10
Croton Seeds	per cwt.	35 0	..	35 0	..	11 0
Cubeb	25 0	..	26 0	22 6	..	23 6
Cumin	20 0	..	20 0	16 0	..	20 0
David	12 0	..	15 0	11 0	..	15 0
Penagreek	12 0	..	16 0	8 0	..	16 0
Gum Grains	23 0	..	0 0	25 0	..	27 0
Juniper Berries	10 0	..	10 0	7 0	..	13 0
Nux Vomica	8 6	..	14 0	7 0	..	13 0
Tamarindus, East India	20 0	..	25 0	7 0	..	16 0
West India	9 6	..	10 0	10 0	..	13 0
Vanilla, large	per lb.	54 0	..	57 0	..	50 0
inferior	30 0	..	53 0	54 0	..	78 0
Wormseed	per cwt.	0 0	..	0 0	..	0 0
Ginger, Preserved, per lb.	0 6	..	0 7	10 0	..	10 0
HONEY, Chili	per cwt.	37 0	..	33 0	..	46 0
Jamaica	44 0	..	52 0	38 0	..	52 6
Australian	45 0	..	62 0	38 0	..	48 0
PERCACANHA	per lb.	4 0	..	4 6	..	4 7
ISINGLASS, Brazil	7 7	..	4 11	2 10	..	5 6
Tongue sort	3 0	..	3 3	2 0	..	13 0
East India	1 0	..	5 0	1 1	..	4 6
West India	4 4	..	4 10	5 0	..	5 6
Russ, long staple	0 0	..	0 0	8 0	..	13 0
inferior	0 0	..	0 0	4 0	..	8 0
Simovia	3 0	..	4 0	3 3	..	5 0
JALAP, good	0 7	..	0 8	0 7	..	0 7
infer. & stems	0 6	..	0 61	0 7	..	0 71
LEMON JUICE	per degree	0 2	..	0 21	..	0 21
LEMON JUICE	per gall.	1 6	..	3 0	..	3 8
LIGORIC, Spanish per cwt.	37 0	..	90 0	40 0	..	70 0
Liquorice Root	16 0	..	30 0	11 0	..	16 0
MANSA, flaky	per lb.	4 6	..	2 6	..	3 0
small	1 6	..	3 0	1 2	..	1 5
MUSK, Pod	per oz.	15 0	..	42 0	..	20 0
Grain	40 0	..	55 0	42 6	..	57 0
OLEO (see also separate list)						
Almond, expressed per lb.	1 2	..	0 0	0 11	..	0 0
Caster, 1st pale	0 4	..	0 41	0 5	..	0 51
infer. & dark	0 3	..	0 0	0 4	..	0 41
Cod Liver	per gall.	3 3	..	6 0	..	6 3
Croton	per oz.	0 21	..	0 0	..	0 4
Essential Oils—						
Almond	per lb.	25 0	..	0 0	..	25 0
Anise-seed	10 6	..	0 0	9 0	..	0 0
Bay	per cwt.	65 0	..	0 0	..	70 0
Bergamot	per lb.	10 0	..	25 0	..	25 0
Cajeput	per bottle	2 8	..	2 10	..	2 5
Caraway	per lb.	4 2	..	4 3	..	4 9
Cassia	4 2	..	4 3	4 9	..	0 0
Cinnamon	per oz.	1 0	..	5 6	..	0 8
Cinnamon leaf	0 2	..	9 0	0 8	..	7 0
Citronella	0 11	..	0 11	0 11	..	0 3
Clove	per lb.	10 6	..	0 0	..	9 6
Juniper	1 10	..	0 0	1 10	..	1 0
Lavender	per lb.	2 0	..	5 6	..	1 10
Lemon	7 0	..	11 0	7 0	..	10 6

1875.		1874.	
s. d.	s. d.	s. d.	s. d.
Essential Oils, continued—			
Lemongrass . . . per oz.	0 2½	0 3	0 3½
Neroli	0 0	0 0	0 0
Nutmeg	0 0	0 0	0 0
Orange	6 0	9 0	8 0
Otto of Roses . . . per lb.	13 0	25 10	15 0
Peppermint	2 0	3 6	2 8
Peppermint :—			
American . . . per lb.	17 6	18 0	20 6
English	32 4	24 0	29 0
Sassafras	2 2	1 10	1 4
Sassafras	2 2	2 6	2 0
Spearmint	12 0	19 0	6 0
Thyme	0 7½	0 10	0 3
Mace, expressed . . per oz.	0 7½	0 10	0 3
ORIMUM, Turkey . . .	29 0	30 0	35 0
ORIVER	140 0	220 0	0 0
QUASSIA (bitter wood) . . .	140 0	220 0	0 0
RUBIAR, China, good and fine . . .	4 0	4 8	2 1
Rubiaria	0 8	3 0	0 3
Dutch trimmed	0 0	0 0	0 0
Russian	0 0	0 0	0 0
ROMAN, China, per cwt.	2 2	2 10	1 8
China	19 0	24 0	18 0
Galangal	19 0	22 0	22 0
Gentian	23 0	24 0	17 0
Hellebore	26 0	30 0	23 0
Orris	26 0	75 0	30 0
Pellitory	38 0	39 0	38 0
China	0 4	2 0	0 4
Rhazany	0 4	2 0	0 4
Seneke	3 5	3 6	3 6
Snake	0 8	0 0	0 0
SAFFRON	23 0	22 0	26 0
SALEP	0 0	0 0	170 0
SARSAPARILLA, Lima per lb.	0 0	0 0	0 6
Hondura	1 5	2 0	1 4
Jamaica	2 5	2 11	1 8
SARSAPARILLA	0 0	0 0	13 0
second & ordinary	7 0	24 0	8 0
SENNA, Bombay	0 1	0 4	0 1
Alexandria	0 7	2 6	0 3½
SPERMACEET, refined	1 4	0 0	1 0
SQUILLS	0 0 ¾	0 0	1 1½
GUMS.			
AMMONIAC drop . . per cwt.	£ s.	£ s.	£ s.
lump	2 5	2 12½	3 15
ANIMI, fine washed	1 6	1 10	3 10
bold scraped	11 15	13 0	12 0
GUAIACUM, fine	5 0	11 10	10 0
dark	4 10	7 0	5 0
ARABIC, E. I., fine	3 5	3 16	2 18
arts., mid. fin.	1 13	3 ½	1 17
garblings	0 19	1 15	0 19
TURKEY, pick. & fin.	6 0	9 0	7 0
second & inf.	1 10	2 15	1 13
in sorts	1 1	1 4	1 0
Gedda	1 1	1 4	1 0
BARBARY, white	1 5	1 8	1 5
brown	1 5	1 8	1 5
AUSTRALIAN	1 14	2 6	1 15
SAUSAPARILLA, cm. to fin	10 0	25 0	12 0
BENJAMIN, 1st & 2nd	7 10	12 0	7 10
Bumatra 1st & 2nd	3 10	5 10	3 5
COPAL, Angora red	4 0	5 0	3 10
Bengala	4 0	5 0	3 10
Sierra Leone, per lb.	s. d.	s. d.	s. d.
Manilla	27 0	34 0	22 0
DAMMAR, pale	58 0	61 0	45 0
EGG	57 0	60 0	45 0
SUPHUR	12 0	16 0	11 0
GALBANUM	1 0	1 6	1 6
GAMBAGE, pick. pipe per cwt. 180 0	180 0	235 0	180 0
EGG	50 0	80 0	40 0
KINO	50 0	80 0	40 0
KOWAR, rough	36 0	50 0	27 0
scraped sorts	51 0	70 0	41 0
MASTIC, gum	61 0	72 0	80 0
MYRRH, gal. & fine per cwt. 172 6	60 0	72 0	80 0
to fair	61 0	72 0	80 0
OLBAP	60 0	72 0	80 0
amber	45 0	50 0	42 0
garblings	23 0	30 0	23 0
SENAGA	2 0	10 8	2 0
SASINAG	2 0	10 8	2 0
SHELLAC, Orange	135 0	205 0	280 0
Liver	117 6	165 0	267 6
THUS	29 0	30 0	29 0
THIAGANTH, lent	180 0	375 0	240 0
in sorts	20 0	185 0	30 0
SEAL, pale	£ s.	£ s.	£ s.
yellow to tinged	30 0	32 0	32 0
brown	29 10	30 0	28 10
SFERA	0 0	0 0	0 0
COD	41 0	0 0	23 0

Oils, continued.—		1875.		1874.	
Whale, South Sea, pale, per ton	25	0	to	0	29
" " yellow,	32	0	to	0	38
" " brown,	29	0	to	30	26
Hall India, Fish,	23	10	to	24	10
OLIVE, Gallipoli, .. per ton	0	0	to	0	45
" " Trieste,	0	0	to	0	43
" " Levant,	43	10	to	0	41
Mogador,	0	0	to	0	40
Smyrna,	0	0	to	0	44
" " Sicily,	0	0	to	0	42
COCOA-NUT, Coch., ..	41	10	to	42	0
" " Ceylon,	39	0	to	38	10
" " Svalery,	32	0	to	35	10
GROUND NUT AND GINGELY:					
Bombay,	0	0	to	0	0
" Madras,	0	0	to	0	0
PALM, fine,	40	0	to	0	36
LINSEED,	24	10	to	0	27
RAPESEED, English, pale, ..	40	10	to	41	0
" " brown,	39	0	to	38	0
" Foreign, pale,	40	10	to	41	31
" " brown,	0	0	to	0	0
COTTONSEED,	0	0	to	30	0
LARD,	59	0	to	60	62
TALLOW,	27	10	to	45	20
TURPENTINE, American, ..	26	0	to	26	3
" French,	25	0	to	26	0
PETROLEUM, Crude,	0	0	to	0	0
" refined, per gall.	s. d.	s. d.	s. d.	s. d.	s. d.
" Spirit,	0 2½	0 0	0 0	1 2	0 2½
SEEDS.					
CANARY,	per qr.	150	0	155	0
CARAWAY,	" "	0	0	0	0
" German, &c.,	" "	0	0	0	0
CORIANDER,	" "	10	0	18	0
HEMP,	per qr.	60	0	64	0
LINSEED,	" "	60	0	64	0
" Black Sea & Azof	" "	60	0	53	0
" Calcutta,	" "	48	0	56	0
" Bombay,	" "	49	0	57	0
" St. Petersburg, ..	" "	45	0	47	0
Mustard, brown, .. per bshl.	" "	0	0	0	0
" white,	" "	0	0	13	0
Poppy, East India, per qr.	" "	49	0	50	0
SPICES.					
CASIA LINXIA, .. per cwt.	57	0	to	70	0
" Vera,	24	0	to	48	0
" Buds,	95	0	to	105	0
CINNA-MON, Ceylon :					
1st quality, .. per lb.	2	5	to	4	1
2nd do,	1	11	to	3	2
3rd do,	1	8	to	2	3
Tellicherry,	0	8	to	3	0
CLOVES, Penang,	2	2	to	2	0
" Amboyna,	1	6	to	1	7
Zambian,	1	6	to	1	4
Ginger, Jam., fine per cwt.	90	0	to	160	110
" " Ord. to good, ..	52	0	to	80	66
African,	45	0	to	47	0
" Java,	45	0	to	57	0
Malabar,	35	0	to	44	0
Cochin,	58	0	to	120	80
Pepper, Malabar, per lb.	0	12	to	63	0
" " White Tellicherry, ..	0	11	to	61	0
" Cayenne,	3	0	to	3	7
" Tellicherry,	2	11	to	2	11
2nd and inferior, ..	1	1	to	2	0
NUTMEGS, 75 to 80 lb.	3	5	to	4	2
" 80 to 84,	2	11	to	3	6
" 125 to 88,	2	7	to	1	10
PIMENTA,	0	2½	to	6	3
VARIOUS PRODUCTS.					
CORNHLEAF,					
Honduras, black, .. per lb.	1	10	to	1	11
" silver,	1	7	to	2	6
" paste,	1	0	to	0	0
Mexican, black, .. per lb.	1	9	to	1	10
" silver,	1	7	to	1	8
Tenerife, black,	1	3	to	2	2
" " silver,	1	11	to	1	10
SOAP, Castile, .. per cent.	26	0	to	33	0
SPONGE, Turin, pkd prlb.	12	0	to	16	0
" Fair to good, ..	4	0	to	11	0
" Ordinary,	3	11	to	3	11
" Bahama,	0	6	to	0	6
TERRA JAPONICA—					
Benzoin,	28	2	to	30	26
Free cubes,	39	0	to	42	0
Catch,	25	6	to	27	0
WOOD, Dye, Bur, .. per ton	23	15	to	24	15
Brazil, French,	18	4	to	18	4
" Logs,	9	0	to	9	0
Cash,	22	0	to	35	0
Pepper,	9	10	to	10	8
Jamaica,	6	10	to	7	10
Logwood, Campeachy, ..	11	0	to	12	0
Honduras,	7	10	to	8	10
St. Domingo,	7	10	to	8	0
Jamaica,	7	10	to	7	5
Lima, first pile,	9	10	to	11	10

Trade Notes.

MAW'S BENZINE RUBBER.—A very useful novelty, and one which every chemist should sell. It is Maw's Benzine Rubber. It will be found figured and priced in our advertisement pages. It consists of a felt pad mounted on an earthenware pedestal, most conveniently shaped for handling. By using this, benzine, turpentine, and such like fluids, can be applied to gloves, clothes, &c., with the utmost facility and without messing the hands. At the same time nothing can be better than the felt surface for rubbing the material to be operated upon.

MAW'S EMBROCATION RUBBER.—A novelty very similar to the last is Maw's Embrocation Rubber. This is mounted on earthenware or metal, and presents obvious advantages for the application of liniments to the throat, the back, the neck, or other parts of the body where the hand can only be used inconveniently. The felt with its elastic back also offers the means of using a gentle but effective friction if desirable.

JUDSON'S MAHOGANY POWDER.—Messrs. Daniel Judson & Son well understand the requirements of the public, and the art of producing saleable and useful novelties. Their newest experiment will be sure, we think, to attain a great success. It is a sixpenny packet of Mahogany Powder, calculated to make a quart of good mahogany stain. Chemists will not be slow in taking up this novelty.

LYNCH'S "CUIRASS" CHEST PROTECTOR.—Messrs. Lynch & Co. inform us that they sold last year 1,100 dozens of their "Cuirass" chest protectors, and that this year up to the present they have been sending them out at an average of a gross a day. The "Cuirass" is a capital chest protector, and well deserves its popularity.

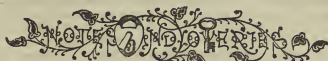
KINMOND'S MAGNESIOLYNE.—In view of the great popularity which effervescent medicines have attained within the past few years, Messrs. Kinmond & Co., of Leamington, have given their attention to the subject, and they now manufacture a product which yields a true citrate of magnesia, and which there is reason to think will keep perfectly in all ordinary conditions. This "Magnesolyné," as they call the article, contains carbonate of magnesia, citric acid, bicarbonate of soda, and sugar, in such proportions as to yield 60 per cent. of its weight as citrate of magnesia. It effervesces very freely, has a pleasant flavour, and is almost, though not perfectly, soluble. There is no other means of administering an appreciable dose of magnesia so agreeably, and if the product can stand climate and weather, we think Messrs. Kinmond have made a successful hit. They put up the magnesolyné to sell in bottles at 1s. and 2s. 6d.

CHILBLAIN PENCILS.—Messrs. S. Maw, Son, & Thompson, are wholesale agents for a very attractive little novelty, which is likely to have a good run. A liniment which has proved, we are informed, highly successful in relieving unbroken chilblains, is enclosed in a glass tube with a narrow mouth, into which is inserted a small piece of sponge and a cork. The neck is covered with a second and smaller tube. The pencils are mounted by the dozen on cards, of which the advertisement elsewhere in this number is a reduced fac-simile. They can be had with English, French, or German labels. For a sixpenny article the style in which these chilblain pencils are produced is unquestionably superior.

CHEMISTS doing a trade in medicine chests would do well to examine the stock of Mr. A. H. Smith, of Featherstone Buildings, a maker whose advertisement appears on a subsequent page. Both cabinet work and fittings are very highly finished, and will do credit to any establishment.

THE "KAMALINE TROCHES" which have been mysteriously advertised for some months past in our pages now prove to be "pink sugar worm cakes," manufactured by Messrs. Howard Hall & Co., of Spitalfields.

THE VICEROY OF INDIA, with the object of providing for the comfort of the Prince of Wales during his visit, has laid in a large supply of Apollinaris Water at Calcutta, Bombay, Madras, and other stations. The stores of the *Serpas* also include a quantity of this water.



CORRESPONDENTS will please observe that the Editor cannot undertake to send private replies to the class of queries which are answered in this page. He will be much obliged if readers will communicate items for this department as well as draw from it. All communications should give (in confidence) the name and address of the writer, though any *nom de plume* may be adopted. No query can be attended to in the current month which reaches this office after the 10th.

Apprentices.—You make a woeful story, and if it will cheer you at all we are quite willing to believe that you are having a hard time of it. But you will be none the worse for that. Remember the saying of Dauiden on the morning of the day fixed for his execution—*La journée sera longue, mais elle finira.*

M. N.—A transparent pomade may be prepared thus:—

Spermaceti	..	..	..	..	2 ounces
Castor oil	..	..	..	..	5 "
Alcohol	..	..	..	..	5 "
Oil of bergamot	..	..	..	..	$\frac{1}{2}$ drachm
Portugal	..	..	..	..	$\frac{1}{2}$ "

Melt together the spermaceti and castor oil, pour in the alcohol by degrees, stir the heat, and add the oil. Stir well, to incorporate, and pour into glass jars.

Prontinal.—You will find in our July number a formula for a spirituous "Prontinaline." Here is a greasy one:—

Brilliantine.

Pure real grease	..	..	..	..	$\frac{3}{4}$ ounces
Spermaceti	..	..	..	..	$\frac{3}{4}$ "
White wax	..	..	..	..	1 "
Oil of almonds	..	..	..	..	$\frac{1}{2}$ "

Melt over a water bath and beat as above. Afterwards pour in:—

Castor oil	2 ounces
------------	----	----	----	----	----------

Beat to incorporate, then add concentrated solution of gum tragacanth in two ounces of rose water. Beat again until perfectly incorporated, then aromatise according to taste.

Water for Bad Breath.

Chloride of lime	..	..	..	..	$\frac{1}{2}$ drachm
Fountain water	..	..	..	..	1 quart
Dissolve, filter, and add:—					
Essence of peppermint	..	..	..	..	1 ounce
Sugar	..	..	..	..	7 ounces

Wash the mouth with this water, which corrects the offensive breath.

J. H. J.—Dr. Henry Bennet has written a work "On the Treatment of Pulmonary Consumption by Hygiene, Climate, and Medicine." It is published by Messrs. Churchill, but we do not know the price. We believe the author relies mostly on climatic influences, but Dr. Churchill claims much of the credit of Dr. Bennet's cure for the phrophosities. See our review of Dr. Churchill's work on consumption in *THE CHEMIST AND DRUGGIST* for March, 1875.

In reply to W. A. C.'s query last month for the best adhesive material to use for labels to go on tins, R. R. says "your correspondent should try shellac dissolved in wood naphtha."

R. H. N. (Manchester) writes:—"W. A. C. will probably find a solution of glue and sugar to answer for sticking paper labels to tin (or metallic surfaces), viz.:—

Coarse brown sugar	..	..	..	..	1 part
Common glue	..	..	..	..	6 or 8 parts
Water	..	..	..	..	q. s.

My experience of it is confined to its use when hot (like Jone's glue), but by using sufficient water I think a solution for use when cold may be made."

T.—The register is supplied by the Registrar, 17 Bloomsbury Square, London. Chemists and druggists, other than pharmaceutical chemists, are not exempt from jury service. See on this point our Diary, nearly ready.

Phytic.—Your label is very neatly worded, and it is a very delicate point whether it comes under the Inland Revenue regulations or not. The words "for children" bring it to the brink. When you get our Diary, see article on the subject and form your own judgment.

A correspondent, referring to the Greenock citrate of magnesia case, remarks that a public analyst should be a perfectly unbiased party striving after justice, not conviction, and he urges us to direct attention to that unsound system that obtains of only paying the public analyst's time in court when conviction is secured.

A Country Subscriber.—We are quite unable to understand your dilemma. If you have followed the formula given in this journal for July, 1876, you have only now to add 2 lbs. 8 oz. of sugar to every 22 fluid ounces of liquid (and dissolve with gentle heat. Of course you have made up your liquid with water to the required measure as directed. To make $\frac{1}{2}$ cwt. as an experiment was, however, a most reckless exploit.

Finish.—Your Excise officer is unquestionably right. The Act (24 & 25 Vict. ch. 81) commences "Any person, not being a distiller, or rectifier, or a dealer in, or retailer of, beer, spirits, wine or sweets, may take an excise licence authorising him to receive and sell methylated spirits in the quantity allowed by this Act on payment of the annual duty on such license of 2l. 2s." You may, however, sell methylated finish without any license.

W. S. J. asks, "Is there any Price Book (similar to the Druggists' Price Book, by D. Elliott) published suitable for an oil merchant and dyersaler?" We know of none. If there is one, will somebody kindly inform us?

Della asks, "Can any of your correspondents suggest a good colouring for a 'cherry tooth paste,' also a receipt for a 'soapy tooth wash' like floriline or aquadentine?"

T. E. W.—The manufacture, possession, or sale of "any article whatsoever capable of being used either wholly or partially as a beverage, or internally as a medicine prepared with methylated spirit" renders the offender liable to a penalty of 100l. Sulphuric ether, chloroform, and the manufacture of chloral hydrate are especially exempted from this regulation. The Pharmaceutical Council has recently asked the authorities of Somerset House for an opinion as to the legality of preparing tincture of opium with methylated spirit. The reply was that as the preparation might be taken internally it was clearly illegal to use methylated spirit in its preparation.

England.—Quinine wine, made according to the British Pharmacopœia, may be sold without a "sweets" license, nor does it require a medicinal stamp. You will notice that the *summa summarum* of the Pharmacopœia is somewhat indefinitely described as a "wine made in Britain by the fermentation of a saccharine solution to which the fresh peel of the bitter orange has been added." For authority see THE CHEMIST AND DRUGGIST, November, 1867.

England also asks, "What is the best medium for mounting starches, so as not to render the granules too transparent. Can samples of drugs in powder (rhubarb, mustard, ginger, &c.), be mounted so as to be kept for comparison with suspected samples?"

And on the principle of give and take *England* favours us with the following reply to Mr. Beech, Birmingham. A winter drink is made in Derbyshire, composed of 3 ozs. tr. ginger, 1 oz. tr. cayenne, q.s. syrup and burnt sugar, and 5 gallons water. This is charged with carbonic acid and sold at 3d. per doz.

A. B.—See reply to *England*.

W. M. asks, "What is the proper strength of Ether-Chloride?" According to all authorities chloric ether is now synonymous with sp. chloroform. B. P., that is, 1 part of chloroform with 19 of spirit, and this preparation is dispensed exclusively by most of the chief houses when chloric ether is prescribed. A few houses, however, especially in Scotland, still employ Duncan's distilled chloric ether in such a case, and only use spirit of chloroform when it is expressly ordered. Duncan's preparation is more nearly equal to 1 part of chloroform in 8; consequently the taste of a mixture differs appreciably if it is dispensed at houses following the different practices.

E. D. M.—A person with two or more shops is only required to take out one patent medicine license.

Meta.—To remove dandriff frequent washing of the head with soap and water is recommended, together with the application of an alkaline or spirituous lotion, as, e.g., 2 ozs. liq. potassæ in 1 pint of water, or rum and water.

Apprentice.—You can remove the stain of marking ink from linen without any injury to the fabric by applying a strong solution of cyanide of potassium, and rinsing in cold water immediately afterwards.

B. B.—The vapour of hot water simply is the best application as an inhalant in ordinary cases of sore throat, loss of voice, &c. The question, however, is a little beyond our province.

G. R.—Peroxide of hydrogen is prepared by acting on peroxide of barium diffused through water with hydrochloric acid. If a chemically pure preparation is required, hydrofluosilicic acid is employed. The result in either case is a solution of the peroxide of hydrogen. If much concentrated, the compound readily decomposes.

A. T. T. wants a formula for "Circassian Water" for the hair—a dye. He believes it contains precipitated sulphur and acetate of lead as the active ingredients. We are not acquainted with the particular preparation named, but our own analyses of certain hair restorers a few years ago showed that the most famous of them contained sulphur in the proportion of from 40 to 75 grains, and acetate of lead from 20 to 90 grains to the half pint, with a little glycerine. A compound of this sort might as well be called "Circassian Water" as by any other name.

H.—Druggists are required to obtain a license if they keep "petroleum" in any form except in bottles containing not more than a pint, and not more than three gallons in all. For fuller particulars, see our *Diary* for 1876, nearly ready. None but registered chemists and druggists may sell kerosene, and any person so infringing the Pharmacy Act is liable to a penalty of £l. Give information to the secretary of the Pharmaceutical Society, 17 Bloomsbury Square, London.

Vinegar asks for the name and address of some one who would mend neatly some large broken compo mortars, either by cementing or riveting. He has tried the former plan with various cements, but unsuccessfully, owing, he thinks, to his want of skill.

Anti-Humbog refers in a long letter to Mr. Greenish's remarks on the higher percentage of success at the Edinburgh than at the London examinations and thinks he can furnish a better explanation thereof than the one Mr. Mackay gave. We should have printed "Anti-Humbog's" letter if it had not been mixed up with a lavish personal abuse of the London Examiners but the effect of it is, that having failed for the Modified and the Minor in London on certain occasions, our hero ultimately passed the Modified at Edinburgh, the Examiners there, he remarks, "being different men altogether from the London lot. In fact, I found them gentlemen in every sense of the word. No bullying; no turning up of the nose; no untruths told to the candidates: everybody treated in a respectable manner and as respectable persons."

T. H.—We cannot say for certain what apparatus Mr. Easie may have referred to in his lecture at Brighton, but should suppose he meant the Auto-Pneumatic Gas Machine, which was exhibited at the Congress. By this apparatus gas is manufactured from gasoline, but it appears to be dearer than gas from coal, besides necessitating an expensive apparatus. You would get all particulars from the company, at 114 Strand.

R. G. H.—The only exception in the Petroleum Act is in favour of a quantity not exceeding three gallons, and kept in securely stoppered vessels containing not more than a pint each. For fuller information see our *Diary* for 1876, which you will receive shortly. You will find full instructions for the preparation of homœopathic medicines in the Homœopathic Pharmacopœia, which you can get from any of the wholesale homœopathic chemists.

Alpha asks us to define his legal position for him. The Pharmaceutical Society weighs on his mind. He has made two unsuccessful efforts to pass the Modified examination, and he does not think the examiners will ever let him pass, for he is diminutive in stature and requires time to concentrate his thoughts. And yet he has managed businesses for several chemists, and has dispensed for 700 or 800 patients in a week. We quite agree that to pluck him on account of his size is cruel and cowardly, but we would advise our correspondent to try once more, working up the subjects well previously; then he can treat those base examiners as superciliously as they have formerly treated him.

P. R. S.—1. The Papyrographic process (Zuccato's patent) is the only one we know of for the reproduction of a number of fac-simile circulars, other than from a lithographic stone. The latter of course cannot be executed at home. Circulars can be printed by Zuccato's process, on the contrary, by any boy of ordinary neatness. The first outlay, if you have a copying press, would vary from £l. to 10l. 2. In our opinion home printing is not worth cultivating. Chemists' printing ought always to be of a very superior character, and this is only secured by first-class machinery. 3. We cannot recommend special firms. We leave our advertisement pages to do that. 4. We cannot imagine any useful purpose which bottles with stop-cocks would serve in the dispensing department. Large ones are useful in the store for keeping tinctures in after pressing.

In our report of the South London School of Pharmacy last month (page 344, 2nd col., 1st paragraph) an error occurs which suggests the sense of the whole structure. We say that "of South London students 73 presented themselves and 19 passed." For 19 read 49.

R. B.—*Koumiss*. The formula given below is said by the *American Journal of Pharmacy* to be the Russian plan of making koumiss: The ferment is made by mixing two tea-cupfuls of wheat-flour, one spoonful of honey, one of good beer yeast and sufficient milk to form a not too thin paste, which is put in a moderately warm place to ferment. This ferment is now put in a linen bag, and hung in a jar or keg containing sixteen pounds fresh mare's milk; cover and let stand till the milk has acquired a pleasant acidulous taste (about 16 to 24 hours, according to the temperature). The butter and cheese particles, which float about, are now skimmed, the liquid is poured into another keg and shaken for one hour, after which time it is filled into bottles, corked and put into the cellar. A "cure" requires twelve to fifteen pounds of milk daily (two mares), and the best season is from May to July. The koumiss is taken early in the morning, every half or one hour (a tea-cup to a tumblerful at a time), and plenty of exercise.

Country Assistant.—(1) Aitken's "Outlines of the Science and Practice of Medicine" (J. Griffin & Co.), 12s. 6d. (2) Blaine's "Outlines of the Veterinary Art" (Churchill), 18s. (3) Mayne's "Medical Vocabulary" (Churchill), 8s. 6d.